1970-06

A study of the two-flow model of light in the sea

Crisp, Marvin Howard

Monterey California. Naval Postgraduate School

A STUDY OF THE TWO-FLOW MODEL OF LIGHT IN THE SEA

Marvin Howard Crisp

United States
Naval Postgraduate School

THESIS

A Study of the Two-Flow Model
of Light in the Sea

by

Marvin Howard Crisp

June 1970

A Study of the Two-Flow Model of Light in the Sea

by

Marvin Howard Crisp
Lieutenant (junior grade), United States Navy
B.S., United States Naval Academy, 1969

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MATHEMATICS

from the

NAVAL POSTGRADUATE SCHOOL
June 1970

ABSTRACT

The principles of invariance form the foundation of the study of irradiance fields in the sea. By review of the existing theory, it is shown how these principles may be applied to imbedded layers to derive complete reflectance and transmittance factors for the containing layer. These complete factors in turn yield the desired irradiance fields. They are also used to develop local invariance principles and the associated local transmittance and reflectance factors. Differential equations for reflectance and transmittance are developed, based on these local factors, and in turn are used in numerical computations of the reflectance and transmittance factors for arbitrarily deep layers of water. Boundary conditions on the upper and lower surfaces of the layer are chosen so that the complete reflectance and the complete transmittance factors generate the irradiances of the appropriate light field. Numerical computations are based on real data for eight natural media. To study the dependence of the light field on extreme cases of the optical properties, two hypothetical cases are also considered.

TABLE OF CONTENTS

		Page
I.	INTRODUCTION	11
II.	PHYSICAL SETTING	12
III.	DISTRIBUTION FUNCTIONS	13
IV.	PRINCIPLES OF INVARIANCE	15
	A. INVARIANT IMBEDDING RELATION	15
V.	LOCAL PRINCIPLES OF INVARIANCE	17
VI.	DIFFERENTIAL EQUATIONS FOR THE STANDARD REFLECTANCE AND TRANSMITTANCE FACTORS	19
VII.	CONCLUSIONS	22
COMPUTER OUTPUT		69
COMPUTER PROGRAM		109
LIST OF REFERENCES		112
INITIAL DISTRIBUTION LIST		113
FORM DD 1473		114

LIST OF TABLES

Table		Page
1-A	Distilled Water A	69
1-B	Distilled Water A	71
2-A	Distilled Water B	73
2-B	Distilled Water B	75
3-A	Pacific Coastal Water 1	77
3-B	Pacific Coastal Water 1	79
4-A	Pacific Coastal Water 2	81
4-B	Pacific Coastal Water 2	83
5-A	Pacific Coastal Water 3	85
5-B	Pacific Coastal Water 3	87
6-A	Pacific Coastal Water 4	89
6-B	Pacific Coastal Water 4	91
7-A	Lake Pend Oreille [1]	93
7-B	Lake Pend Oreille [1]	95
8-A	Lake Pend Oreille 2	97
8-B	Lake Pend Oreille 2	99
9-A	Hypothetical Case 1	101
9-B	Hypothetical Case 1	103
10-A	Hypothetical Case 2	105
10-B	Hypothetical Case 2	107

Note: The "A" Tables correspond to the general light field where $D(+)=8/3$ and $D(-)=4/3$. The "B" Tables correspond to the collimated light field where $D(\pm)=1$.

LIST OF FIGURES

Figure		Page
1-A	Reflectances for Distilled Water A	27
1-B	Transmittances for Distilled Water A	28
1-C	Complete Reflectance and Complete Transmittance	29
1-D	Interreflectance for Distilled Water A	30
2-A	Reflectances for Distilled Water B	31
2-B	Transmittances for Distilled Water B	32
2-C	Complete Reflectance and Complete Transmittance	33
2-D	Interreflectance for Distilled Water B	34
3-A	Reflectances for Pacific Coastal Water 1	35
3-B	Transmittances for Pacific Coastal Water 1	36
3-C	Complete Reflectance and Complete Transmittance	37
3-D	Interreflectance for Pacific Coastal Water 1	38
4-A	Reflectances for Pacific Coastal Water 2	39
4-B	Transmittances for Pacific Coastal Water 2	40
4-C	Complete Reflectance and Complete Transmittance	41
4-D	Interreflectance for Pacific Coastal Water 2	42
5-A	Reflectances for Pacific Coastal Water 3	43
5-B	Transmittances for Pacific Coastal Water 3	44
5-C	Complete Reflectance and Complete Transmittance	45
5-D	Interreflectance for Pacific Coastal Water 3	46
6-A	Reflectances for Pacific Coastal Water 4	47
6-B	Transmittances for Pacific Coastal Water 4	48
6-C	Complete Reflectance and Complete Transmittance	49

Figure Page

6-D Interreflectance for Pacific Coastal Water 4 --- 50

7-A Reflectances for Lake Pend Oreille 1 ---------- 51

7-B Transmittances for Lake Pend Oreille 1 --------- 52

7-C Complete Reflectance and Complete Transmittance - 53

7-D Interreflectance for Lake Pend Oreille 1 ------- 54

8-A Reflectances for Lake Pend Oreille 2 ---------- 55

8-B Transmittances for Lake Pend Oreille 2 --------- 56

8-C Complete Reflectance and Complete Transmittance - 57

8-D Interreflectance for Lake Pend Oreille 2 ------- 58

9-A Reflectances for Hypothetical Case 1 ---------- 59

9-B Transmittances for Hypothetical Case 1 --------- 60

9-C Complete Reflectance and Truncated Reflectance -- 61

9-D Complete Transmittance and Truncated Transmittance ---------- 62

9-E Interreflectance for Hypothetical Case 1 ------- 63

10-A Reflectances for Hypothetical Case 2 ---------- 64

10-B Transmittances for Hypothetical Case 2 --------- 65

10-C Complete Reflectance and Truncated Reflectance -- 66

10-D Complete Transmittance and Truncated Transmittance ---------- 67

10-E Interreflectance for Hypothetical Case 2 ------- 68

LIST OF SYMBOLS

$X(x,z)$	Slab of water with boundary surfaces at x and z.
$H(z,\pm)$	Irradiances of upward (+) flux/downward (-) flux.
$D(z,\pm)$	Distribution functions of the light field.
a	Volume absorption coefficient.
b	Backward scattering coefficient.
$a(\pm)$	Volume absorption coefficient for (+)/(-) stream.
$b(\pm)$	Backward scattering coefficient for (+)/(-) stream.
α	Volume attenuation coefficient.
s	Volume total scattering coefficient.
ρ	Scattering-attenuation ratio ($= s/\alpha$).
$T(x,y)$	Standard transmittance of the (-) stream in $X(x,z)$.
$R(x,z)$	Standard reflectance of the (-) stream in $X(x,z)$.
$T(z,x)$	Standard transmittance of the (+) stream in $X(x,z)$.
$R(z,x)$	Standard reflectance of the (+) stream in $X(x,z)$.
$\mathcal{R}(x,y,z)$	Complete reflectance at depth y for a slab of depth $(z-x)$.
$\mathcal{T}(x,y,z)$	Complete transmittance at depth y for a slab of depth $(z-x)$.
$\rho(z,\pm)$	Local reflectance factors for (+)/(-) stream.
$\tau(z,\pm)$	Local transmittance factors for (+)/(-) stream.
IR	Interreflectance.
$T(o,d)$	Truncated transmittance.
TR	Truncated reflectance: $T(o,d) \cdot R(d,o)$.
———	Solid line on figures corresponds to normal light field, $D(+) = 8/3$, $D(-) = 4/3$.
- - - - - -	Dashed line corresponds to collimated light field; $D(+) = D(-) = 1$.

ACKNOWLEDGEMENT

I wish to express my gratitude to Professor R. W. Preisendorfer without whose guidance and encouragement this paper would not have been possible.

I. INTRODUCTION

Radiative transfer problems in a natural optical medium can be solved by means of appropriate models presented in Ref. 1. These models utilize the concepts of irradiance, or radiant flux per unit area on a surface, and therefore use a single value rather than the infinite set of numbers required by the radiance distribution. The geometric structure of atmospheric or oceanic light fields is such that the variations of these fields over great distance within horizontal planes is negligible, so that the irradiance value at one point of a horizontal plane is the same as at other remote points of the plane. As a result of this very slight variation the light field over a plane may be characterized by a single irradiance common to all points of the plane. Consequently, the flow of radiant energy into the sea or the atmosphere is reduced under these conditions to the irradiance flow along a straight line normal to the horizontal planes of that region of the sea or air under consideration.

The model used in this study of optical media was based on this straight-line flow in which the flow itself was broken into two parts, a downward flow and an upward flow.

Eight real optical media are considered. Computations are based on measured optical data, and comparisons are made between the various computed irradiances as a function of depth, and the variations of the parameters in the two-flow model. The

computations were based on measured absorption and scattering parameters which in turn were derived from samples of distilled water, Pacific Coastal and off-shore water, and water from Lake Pend Oreille, Idaho. These measurements were made by Tyler [Ref. 2] and the coefficients for attenuation, total scattering, absorption and backward scattering were taken from his results. Two additional media studied were purely hypothetical which covered parameter ranges not ordinarily found in lakes or the sea. The purpose of studying these hypothetical media was to ascertain the dependences of the reflectance and transmittance factors on depth and lighting geometry in highly scattering media.

II. PHYSICAL SETTING

The media were considered to be plane-parallel slabs X(a,b) which were free from internal sources so that the radiative properties depended only on depth z within X(a,b), $a \leq z \leq b$. Depth was measured from z=0 at the surface downward to a final depth arbitrarily chosen to be fifteen optical depths for this study, where an optical depth corresponds to the inverse of the attenuation coefficient, α. Direction is indicated by (+) for upward and (-) for downward flow.

Irradiance is the concept of area density of radiant flux and is defined as follows. Let S be a flat, horizontal surface at a depth, z, which is connected to a meter which reads the

amount of monochromatic radiant energy striking the surface per unit time. Irradiance is defined as the quotient of this power reading by the collecting surface area and hence has dimension power per area, which may be represented in units of watts per square meter. In this context, $H(z,+)$ is the irradiance of upward flux on S at a depth, z, and $H(z,-)$ is the irradiance of downward flux at the same depth.

III. DISTRIBUTION FUNCTIONS

Irradiance at a depth z can be measured in a second manner. Consider a spherical surface with a surrounding barrier which allows the radiant energy to flow in only from the upper or lower directional hemisphere, depending upon whether the allowed flow is in the downward or upward direction. Irradiance is then the radiant flux per unit surface area of sphere and is denoted "$h(z,-)$" for downward and "$h(z,+)$" for upward flow.

The distribution functions are defined to be the ratio of these two irradiances:

$$D(z,\pm) = \frac{h(z,\pm)}{H(z,\pm)} .$$

Some examples will clarify the concept.

Example 1.

Consider a beam of energy of cross-section area A, power P, striking a flat surface at an angle θ from the area's normal. Then the area on the surface receiving radiant energy is A sec θ. Then:

$$H(\theta) = \frac{P}{A \sec \theta} = \frac{P}{A} \cos \theta = H \cos \theta$$

and $D = h/H = \sec \theta$. Hence $D = 1$ for normal incidence, and D increases as the angle of incidence becomes more oblique.

Example 2.

If we consider energy incident in equal amounts over all angles from a hemisphere onto the collecting surface then we find that

$$D = h/H = 2.$$

In general, it has been experimentally discovered that the values D(+) and D(-) differ by a factor of two, and in fact have approximate values of D(-) = 4/3 and D(+) = 8/3 for the green wavelength in most natural waters. Note also that the sum is consequently approximately four. It has been found that even though these values may vary slightly, their sum remains essentially the same.

These D-factors from the basis of the two-D theory as developed in Ref. 3. Using these distribution factors, the volume absorption functions and backward scattering functions for the upward and downward streams are obtained by:

$$a(z,\pm) = D(\pm)a(z)$$

$$b(z,\pm) = D(\pm)b(z).$$

The first of these is exact. The second in an approximation to the exact expression for $b(z,\pm)$ for the purposes of this study. For full definitions, see Ref. 1.

IV. PRINCIPLES OF INVARIANCE

There are two basic "axioms" of the subject of irradiance and these are the principles of invariance developed in Ref. 1. Specialized for invariance they are:

$$H(y,+) = H(z,+)T(z,y) + H(y,-)R(y,z) \tag{1}$$

$$H(y,-) = H(x,-)T(x,y) + H(y,+)R(y,x) \tag{2}$$

where $a \leq x \leq y \leq z \leq b$. The numbers $T(x,y)$, $R(y,x)$, $T(z,y)$ and $R(y,z)$ are the transmittances (T) and reflectances (R) of the pieces $X(x,y)$ and $X(y,z)$ of the slab $X(a,b)$.

Note that $T(x,x) = 1$ and $R(x,x) = 0$.

A. INVARIANT IMBEDDING RELATION

Using (1) and (2) it is possible to derive the invariant imbedding relations for the slab $X(a,b)$. That is, knowing the value of $H(a,-)$ and $H(b,+)$ which comprise the irradiance sources of the slab, how can the intermediate values $H(y,-)$ and $H(y,+)$ be calculated? Application of the invariance principles (1) and (2) to a subslab $X(x,z)$, (by letting $a = x$, $b = z$) yields two new equations dependent only on the known irradiance sources:

$$H(y,+) = H(z,+)\mathcal{T}(z,y,x) + H(x,-)\mathcal{R}(x,y,z) \tag{3}$$

$$H(y,-) = H(x,-)\mathcal{T}(x,y,z) + H(z,+)\mathcal{R}(z,y,x) \tag{4}$$

where:

$$\mathcal{R}(x,y,z) = \frac{T(x,y)R(y,z)}{1-R(y,x)R(y,z)} \tag{5}$$

$$\mathcal{T}(x,y,z) = \frac{T(x,y)}{1-R(y,x)R(y,z)} \tag{6}$$

$$\mathcal{R}(z,y,x) = \frac{T(z,y)R(y,x}{1-R(y,x)R(y,z)} \tag{7}$$

$$\mathcal{T}(z,y,x) = \frac{T(z,y)}{1-R(y,x)R(y,z)} \tag{8}$$

The operators $\mathcal{R}, \mathcal{T}$ defined in (5) - (8) are the complete reflectance and complete transmittance factors. Note the following special results for all x and y:

$$\mathcal{R}(x,x,y) = R(x,y)$$
$$\mathcal{T}(x,y,y) = T(x,y)$$
$$\mathcal{R}(x,y,y) = 0$$
$$\mathcal{T}(x,x,y) = 1.$$

These statements are obtained directly from (5), (6) upon proper substitutions. A complementary set may be obtained from (7), (8).

The imbedding relations (3), (4) provide the general form of the solution to the radiative transfer problem in the slab X(a,b). Knowing the $\mathcal{R}$ and $\mathcal{T}$ factors for every level of a subslab X(a,y) in X(a,b) will yield the irradiance field H(y,+), H(Y,-) at that level y in X(a,b). The complete reflectance and transmittance operators are dependent on the standard operators R and T, Consequently, knowing either the value of R and T, or the $\mathcal{R}$ and $\mathcal{T}$ factors, all questions about H(y,±) can be answered.

V. LOCAL PRINCIPLES OF INVARIANCE

Isolation of the subslab X(x,z) of X(a,b) and formation of the difference quotient:

$$\frac{H(z,\pm) - H(x,\pm)}{z-x} \tag{9}$$

and observing the associated limit as x approaches z, results in a reduction of the irradiance field to a completely local description in terms of the change of the irradiance field at a depth z.

Consider the downward field. Setting y = z in (2) yields:

$$H(z,-) = H(x,-)T(x,z) + H(z,+)R(z,x)$$

The difference quotient (9) applied to this representation of H(z,-) gives:

$$\frac{H(z,-) - H(x,-)}{z-x} = H(x,-)\frac{[T(x,z)-1]}{z-x} + H(z,+)\frac{R(z,x)}{z-x} \tag{10}$$

As z-x approaches zero and the slab becomes increasingly thinner, its reflectance approaches zero and its transmittance approaches one yielding the possibility of well-defined limits for the quotients on the right side of (10).

Therefore the following definitions are made:

$$\tau(z,-) = \lim_{x\to z} \frac{T(x,z)-1}{z-x} \tag{11}$$

$$\rho(z,+) = \lim_{x\to z} \frac{R(z,x)}{z-x} \tag{12}$$

$$\frac{dH(z,-)}{dz} = \lim_{x\to z} \frac{H(z,-) - H(x,-)}{z-x} \tag{13}$$

These definitions give rise to the differential equation for $H(z,-)$:

$$\frac{dH(z,-)}{dz} = H(x,-)\tau(z,-) + H(z,+)\rho(z,+) \tag{14}$$

This is the governing equation for the downward irradiance field $H(z,-)$. Similarly, setting $y=z$ in (1) and applying a second difference quotient we have:

$$-\frac{H(x,+)-H(z,+)}{x-z} = H(z,+)\ \frac{[T(z,x)-1]}{z-x} + H(x,-)\ \frac{R(x,z)}{z-x} \tag{15}$$

The definitions:

$$\tau(z,+) = \lim_{x\to z} \frac{T(z,x)-1}{z-x} \tag{16}$$

$$\rho(z,-) = \lim_{x\to z} \frac{R(x,z)}{z-x} \tag{17}$$

$$\frac{dH(z,+)}{dz} = \lim_{x\to z} \frac{H(x,+)-H(z,+)}{z-x} \tag{18}$$

yields the governing equation for the upward irradiance field $H(z,+)$:

$$-\frac{dH(z,+)}{dz} = H(z,+)\tau(z,+) + H(x,-)\rho(z,-) \tag{19}$$

Equations (14) and (19) are the <u>local forms</u> of the principles of invariance and $\tau(z,\pm)$ and $\rho(z,\pm)$ are the <u>local transmittance</u> and <u>local reflectance</u> factors for upward (+) and downward (-) irradiance. These factors are defined in Ref. 3 as:

$$\tau(z,\pm) = -[a(z,\pm) + b(z,\pm)] \tag{20}$$

$$\rho(z,\pm) = b(z,\pm) \tag{21}$$

The assumptions of the two-D theory require the independence of z of $D(z,\pm)$ and the independence of the local transmittance and reflectance factors of depth, so that the "z" may be omitted from $\tau(z,\pm)$ and $\rho(z,\pm)$.

VI. DIFFERENTIAL EQUATIONS FOR THE STANDARD REFLECTANCE AND TRANSMITTANCE FACTORS

Derivation of the differential equations of the R and T factors are based on the local and global forms of the principles of invariance. Stated again, the global forms are:

$$\text{I.} \quad H(y,+) = H(z,+)T(z,y) + H(y,-)R(y,z)$$

$$\text{II.} \quad H(y,-) = H(x,-)T(x,y) + H(y,+)R(y,x)$$

Following the general procedure in Ref. 1, consider a slab X(a,b) with a subslab X(x,z) where $a \leq x \leq y \leq z \leq b$. Assume that H(a,-) is known and H(b,+) is zero.

Let z = b in I and differentiate with respect to y. The boundary conditions give the resulting equation:

$$\frac{dH(y,+)}{dy} = \frac{dH(y,-)}{dy} R(y,b) + H(y,-) \frac{dR(y,b)}{dy}$$

Let y approach a, the upper boundary and define:

$$\frac{\partial R(a,b)}{\partial a} = \lim_{y \to a} \frac{dR(y,b)}{dy}$$

By (14) and (19) we then have:

$$-H(a,+)\tau(+) - H(a,-)\rho(-)$$

$$= [H(a,-)\tau(-) + H(a,+)\rho(+)]R(a,b) + H(a,-) \frac{\partial R(a,b)}{\partial a}$$

Application of I for y = a gives:

$$-H(a,-)R(a,b)\tau(+) - H(a,-)\rho(-)$$

$$= [H(a,-)\tau(-) + H(a,-)R(a,b)\rho(+)]R(a,b) + H(a,-) \frac{\partial R(a,b)}{\partial a}$$

This equation holds for every value of $H(a,-)$, which can therefore be formally cancelled giving the differential operator:

$$-\frac{\partial R(a,b)}{\partial a} = \rho(-)+\tau(-)R(a,b)+R(a,b)\tau(+)+R(a,b)\tau(+)R(a,b) \qquad (22)$$

Setting $x = a$ in II and differentiating gives:

$$\frac{dH(y,-)}{dy} = H(a,-)\frac{dT(a,y)}{dy} + \frac{dH(y,+)}{dy}R(y,a) + H(y,+)\frac{dR(y,a)}{dy}$$

Let y approach b; then by (14) and (19) we have:

$$H(b,-)\tau(-) = H(a,-)\frac{\partial T(a,b)}{\partial b} - H(b,-)\rho(-)R(b,a)$$

Application of II for $y = b$, $x = a$ gives:

$$H(a,-)T(a,b)\tau(-) = H(a,-)\frac{\partial T(a,b)}{\partial b} - H(a,-)T(a,b)\rho(-)R(b,a)$$

Formal cancellation of $H(a,-)$ then yields:

$$\frac{\partial T(a,b)}{\partial b} = T(a,b)\tau(-) + T(a,b)\rho(-)R(b,a) \qquad (23)$$

The principles of invariance I and II can also be written as:

$$\text{I}' \qquad H(x,+) = H(z,+)T(z,x) + H(x,-)R(x,z)$$

$$\text{II}' \qquad H(z,-) = H(x,-)T(x,z) + H(z,+)R(z,x)$$

In II' set $z = b$ and differentiate with respect to x. The boundary conditions then give:

$$0 = \frac{dH(x,-)}{dx}T(x,b) + H(x,-)\frac{dT(x,b)}{dx}$$

Let x approach a and apply (14) and (19).

$$0 = [H(a,-)\tau(-) + H(a,+)\rho(+)]T(a,b) + H(a,-)\frac{\partial T(a,b)}{\partial a}$$

Application of I' for $x = a$ and $z = b$ gives:

$$0 = [H(a,-)\tau(-)+H(a,-)R(a,b)\rho(+)]T(a,b) + H(a,-)\frac{\partial T(a,b)}{\partial a}$$

Formal cancellation of H(a,-) gives the third differential operator:

$$-\frac{\partial T(a,b)}{\partial a} = \tau(-)T(a,b) + R(a,b)\rho(+)T(a,b) \qquad (24)$$

Finally, in I' set x = a and differentiate with respect to z obtaining:

$$0 = \frac{dH(z,+)}{dz} T(z,a) + H(a,-)\frac{dR(a,z)}{dz}$$

Let z approach b and apply (14) and (19) yielding:

$$0 = - H(b,-)\rho(-)T(b,a) + H(a,-)\frac{\partial R(a,b)}{\partial b}$$

Application of II' for x = a, z = b gives:

$$0 = - H(a,-)T(a,b)\rho(-)T(b,a) + H(a,-)\frac{\partial R(a,b)}{\partial b}$$

Formal cancellation of H(a,-) gives the final differential operator:

$$\frac{\partial R(a,b)}{\partial b} = T(a,b)\rho(-)T(b,a) \qquad (25)$$

Reference 1 shows that for the homogeneous medium where ρ and τ are independent of depth and D(+) = D(-) that T(a,b) = T(b,a) and that R(a,b) = R(b,a).

In general, the terms in (22) - (25) do not commute, in particular if computation is done in matrix form or integral operator form. However if the operations are done individually for scalar value fields such as H-fields, then the commutative law holds and (22) - (25) may be rewritten as:

$$-\frac{\partial R(a,b)}{\partial a} = \rho(-) + \left(\tau(-) + \tau(+)\right)R(a,b) + \rho(+)R^2(a,b) \qquad (26)$$

$$\frac{\partial T(a,b)}{\partial b} = [\tau(-) + \rho(-)R(b,a)]T(a,b) \qquad (27)$$

$$-\frac{\partial T(a,b)}{\partial a} = [\tau(-) + \rho(+)\ R(a,b)]T(a,b) \qquad (28)$$

$$\frac{\partial R(a,b)}{\partial b} = \rho(-)T(a,b)T(b,a) \qquad (29)$$

Corresponding differential operators for R(b,a) and T(b,a) are obtained in the same manner. Their form is the same with a corresponding change of sign in the ρ and τ terms as shown here for comparison.

$$-\frac{\partial R(b,a)}{\partial b} = \rho(+) + \big(\tau(+) + \tau(-)\big)R(b,a) + \rho(-)R^2(b,a) \qquad (26')$$

$$\frac{\partial T(b,a)}{\partial b} = [\tau(+) + \rho(+)R(a,b)]T(b,a) \qquad (27')$$

$$-\frac{\partial T(b,a)}{\partial a} = [\tau(+) + \rho(-)R(b,a)]T(b,a) \qquad (28')$$

$$\frac{\partial R(a,b)}{\partial b} = \rho(+)T(b,a)T(a,b) \qquad (29')$$

The differential operators expressed in equations (26), (28), (26') and (28') were the operators used to begin calculation of the data presented in later sections.

VII. CONCLUSIONS

Figures and tables giving the numerical results from which these conclusions are drawn are appended below.

For every medium the reflectances R(o,d) and R(d,o) reached an asymptote at a very early stage ranging from two to six optical depths and 95% of this value was reached in one to three optical depths for normal lighting conditions.

That is, the full reflectance of a deep slab is already reached in the first several meters. For normally collimated incident light, the depth of asymptoticity is slightly greater but the pattern is the same. As would be expected, all other factors the same, the more murky or cloudy (i.e., the greater the scattering-attenuation ratio ρ) the water, the greater the reflectance of a deep slab. Note also that the unequal values of the distribution functions D(+) and D(-) caused a difference in R(o,d) and R(d,o). THIS DIFFERENCE WAS A FACTOR OF TWO; PRECISELY THAT OF THE DIFFERENCE OF THE DISTRIBUTION FUNCTIONS. IN GENERAL, THEN ONE WOULD EXPECT R(o,d) AND R(d,o) TO BE SENSITIVE TO THE DIRECTIONAL DISTRIBUTION OF THE INCIDENT LIGHT. THIS IS PERHAPS THE PRINCIPAL CONCLUSION THAT MAY BE DRAWN FROM THE NUMERICAL STUDY OF THE TWO-D MODEL AND SERVES AS A MATHEMATICAL JUSTIFICATION OF THE MODEL.

The eight natural media (this excludes the hypothetical cases) all indicated on exponential decay in the transmittances T(o,d) and T(d,o). Comparisons of the semi-log slopes of these decays were approximately equal to the volume absorption function multiplied by the appropriate distribution function. THUS, TRANSMITTANCE LOSSES ARE PRIMARILY DUE TO ABSORPTION RATHER THAN BACKSCATTER. Although not exactly a straight line, the hypothetical cases gave approximately the same result which shows the wide range of applicability of the above assertion. THIS STRAIGHT-LINE BEHAVIOR IS THE SECOND

PRINCIPAL CONCLUSION OF THE THEORY, AND ALLOWS GREAT SIMPLIFICATIONS TO BE MADE IN PRACTICAL USE OF THE THEORY BY EXPERIMENTERS.

Note that for all cases $T(d,o)$ is less than $T(o,d)$, i.e., transmittance upward is less than transmittance downward. This is expected since $a(+) > a(-)$ in the general case which, in turn, reflects the assumption $D(+) > D(-)$. For collimated light, where $a(+) = a(-)$ and $b(+) = b(-)$, the two transmittances are equal as were their reflectances $R(o,d)$ and $R(d,o)$. This bears out numerically the polarity theorem in Ref. 1.

In all cases except the last hypothetical media, it is noted that $T(o,d)$ for the normal incidence lighting condition was less than that for the collimated light field. Observe however that as the waters become more milky (ρ greater) $T(o,d)$ increases and this end result, after some thought, is not surprising. It is also noted that as the distribution functions for collimated light are successively increased, $D(\pm) = 1,2,3$, the transmittance $T(o,d)$ decreased.

The interreflectance term, $[1/(1-R(o,d)R(d,o))]$, of the complete reflectance and complete transmittance factors $\mathfrak{R}(o,d,15)$ and $\mathfrak{T}(o,d,15)$ was very nearly unity with the exception of the last extreme hypothetical case. For this reason the complete reflectance $\mathfrak{R}$ and complete transmittance $\mathfrak{T}$ were very nearly $T(o,d)\cdot R(d,o)$ and $T(o,d)$, respectively. These quantities are called truncated reflectance and truncated

transmittance respectively. These truncated quantities are equal to their complete counterparts at zero and fifteen optical depths which correspond to the boundary surfaces of the layer. They were less than their complete counterparts at intermediate depths, but only slightly so. HENCE FOR ALL PRACTICAL PURPOSES, ONE COULD REPLACE THE $\mathcal{R}$ AND $\mathcal{T}$ FACTORS BY THEIR TRUNCATED COUNTERPARTS. THIS IS THE THIRD MAIN CONCLUSION OF THIS STUDY, AND AGAIN THIS PROVIDES A MATERIAL SIMPLIFICATION IN THE PRACTICAL DETERMINATION OF LIGHT FIELDS IN NATURAL WATERS.

Note that the interreflectance term is symmetric about the slab center, rising sharply at the boundary layers and reaching a plateau in about two optical depths, the exception being the last hypothetical media in which the rise was more gradual in a highly scattering material (ρ large). For collimated light the interreflectance is slightly larger and the plateau is reached later. In general one would expect R to reach a plateau later, the larger ρ is.

The numerical data presented here are based on the conditions $H(o,-) = 1$ and $H(15,+) = 0$. By the linearity of (3) and (4) the tabulated values of $\mathcal{R}$ and $\mathcal{T}$ may be used to represent $H(y,\pm)$ for given $H(o,-)$ and $H(d,+)$, taking care that the $\mathcal{R}$ and $\mathcal{T}$ for the appropriate D-factors are used. Observe that the Figures are numbered similarly to the Tables. Thus, Figure 1-A is the plot from Tables 1-A and 1-B and the medium's optical properties appear at the head of each table.

Computer printout required the change of notation A=a, B=b, A(±)=a(±), B(±)= b(±), S=s, ALPHA=α, RHO=ρ. All optical constants are measured generally in the green wavelength: 480 mμ. For further details, consult Ref. 2.

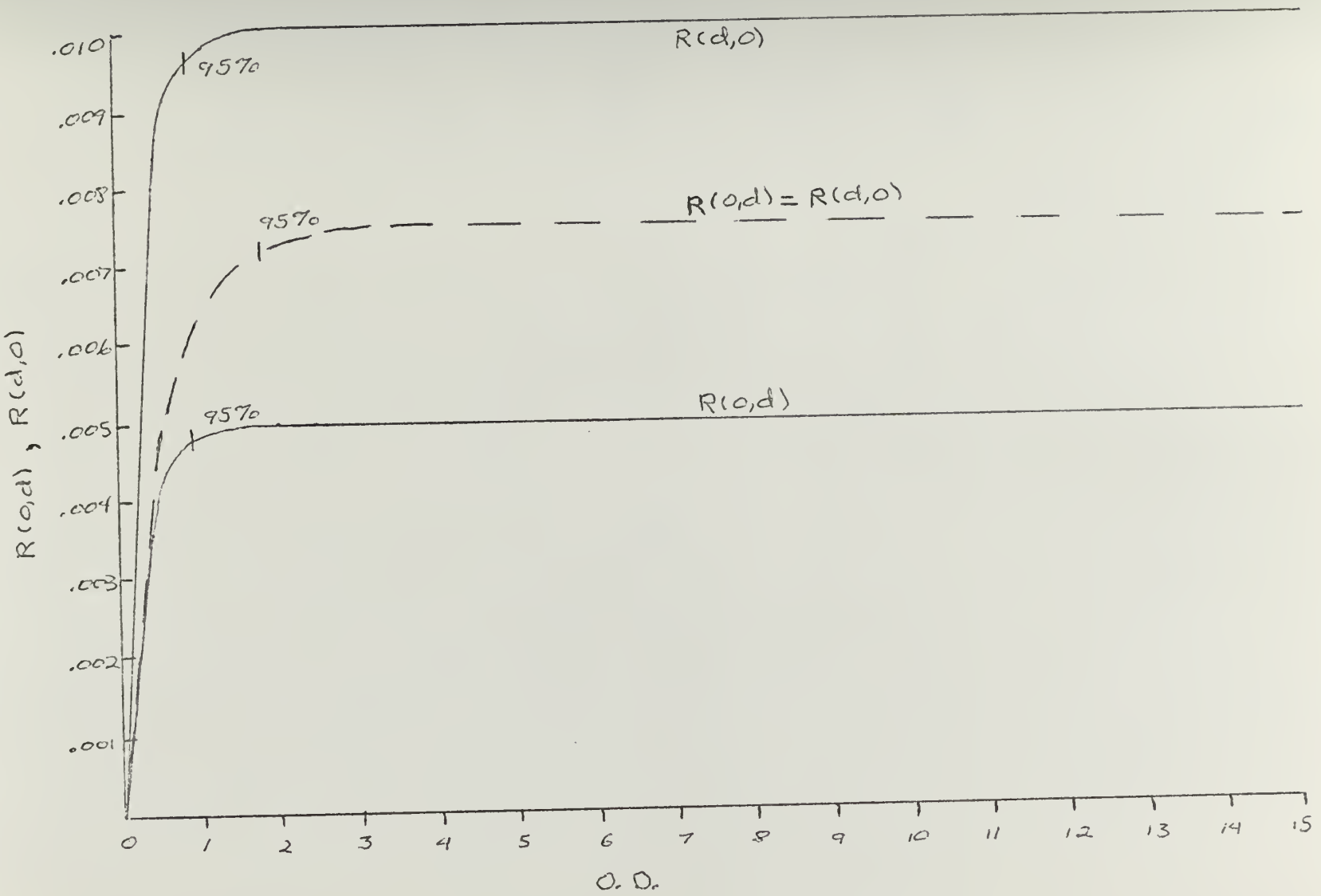


Figure 1-A. Reflectances for Distilled Water A

Figure 1-B. Transmittances for Distilled Water A

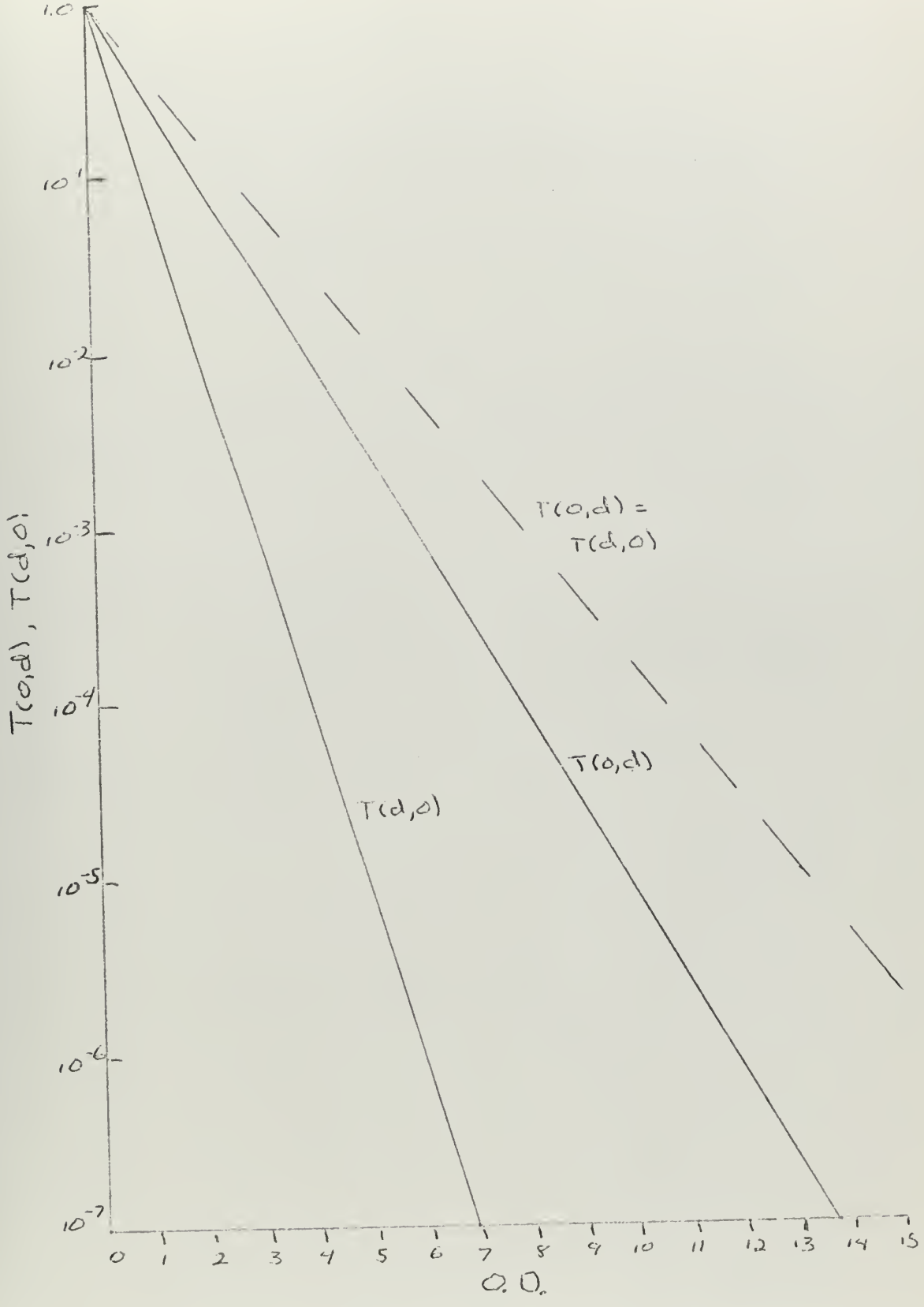
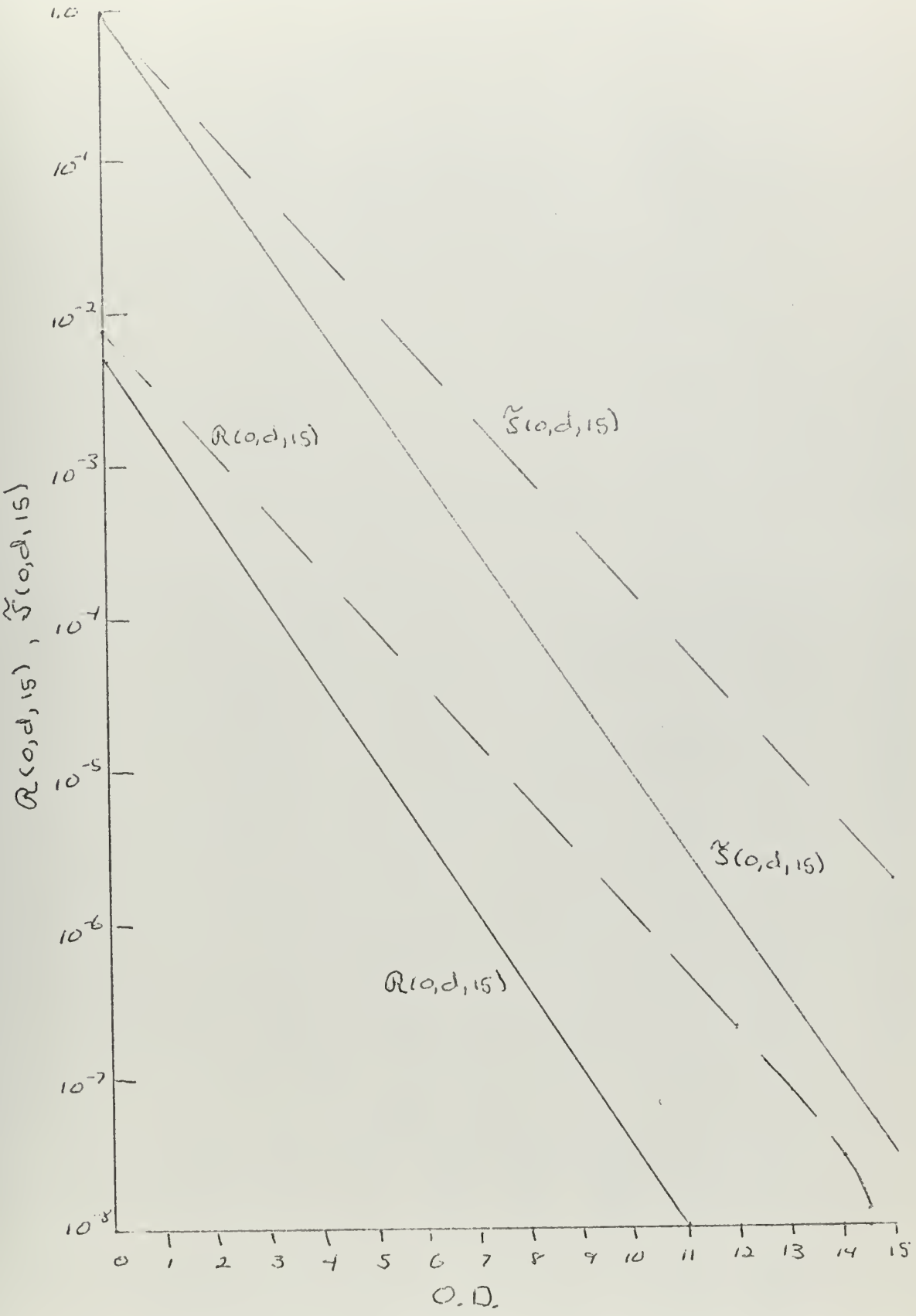


Figure 1-C. Complete Reflectance and Complete Transmittance



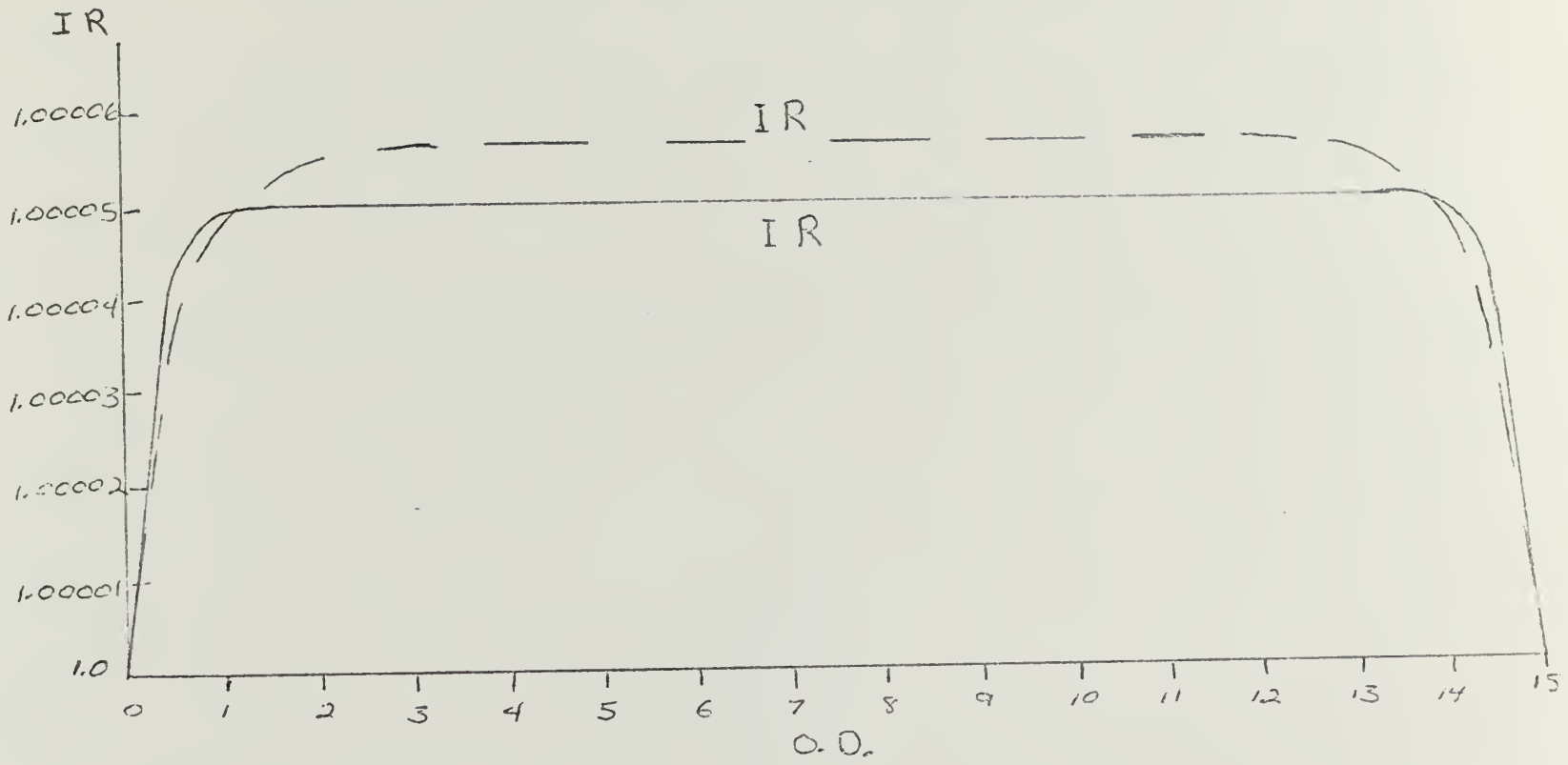


Figure 1-D. Interreflectance for Distilled Water A

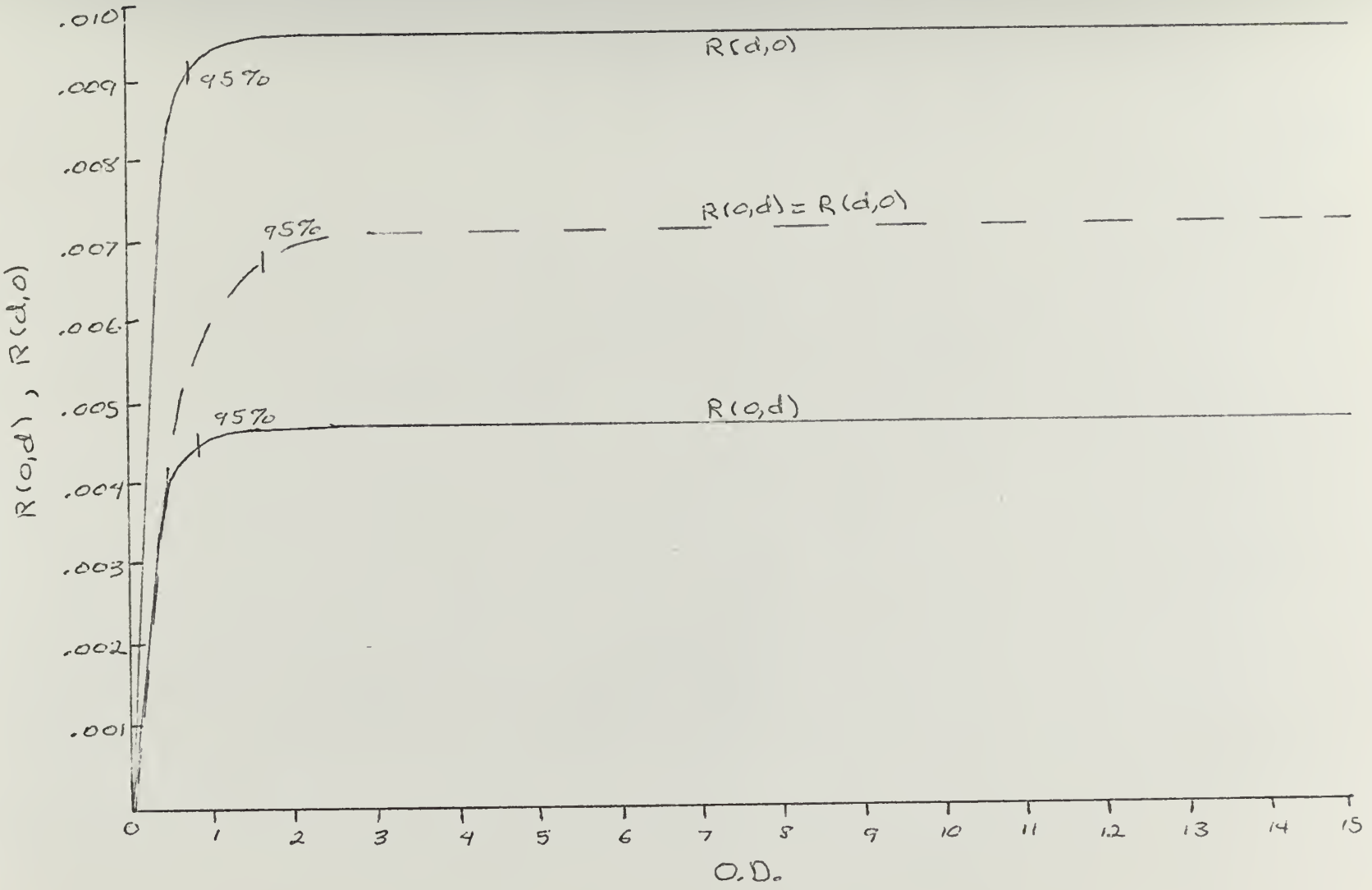


Figure 2-A. Reflectances for Distilled Water B

Figure 2-B. Transmittances for Distilled Water B

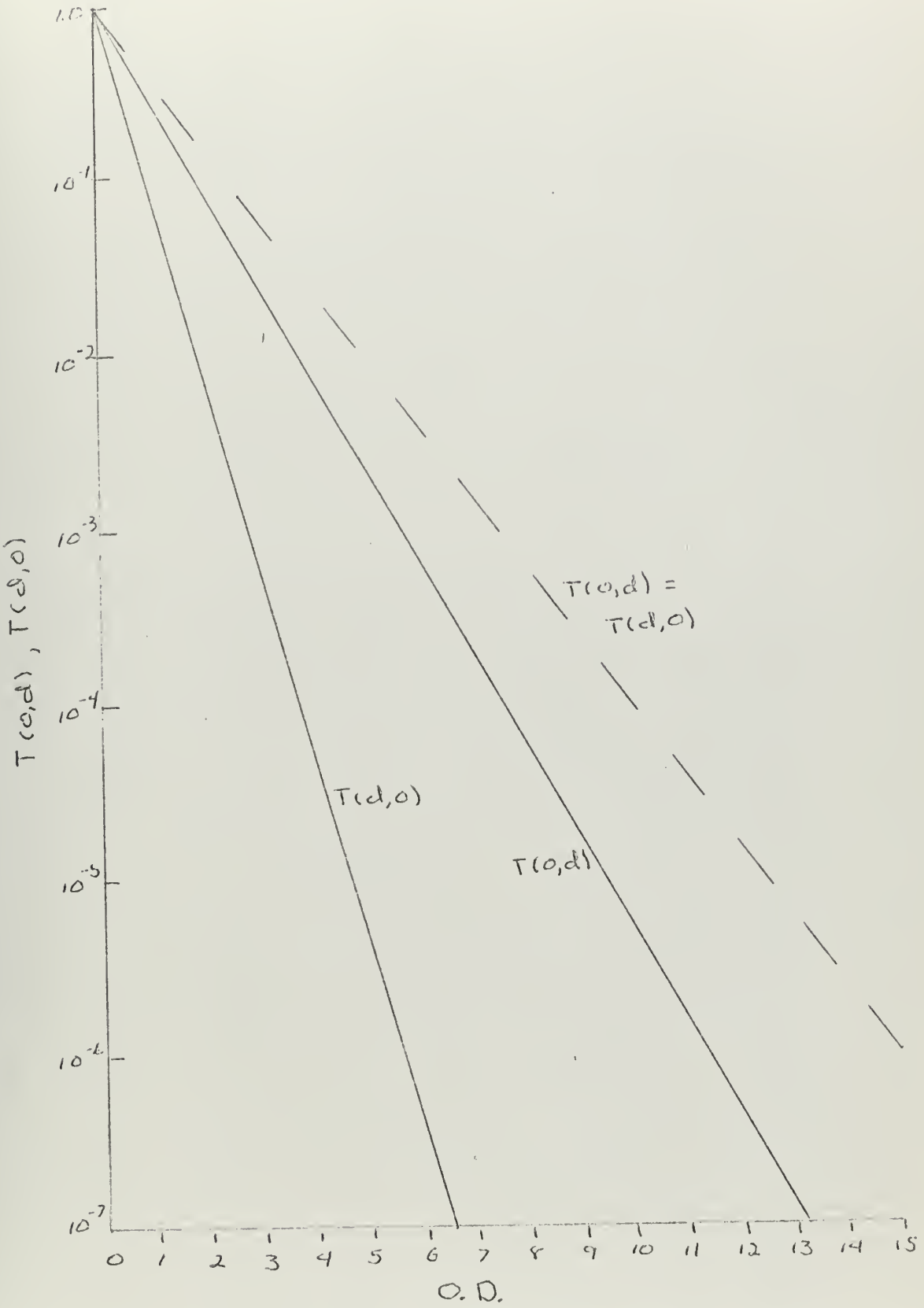
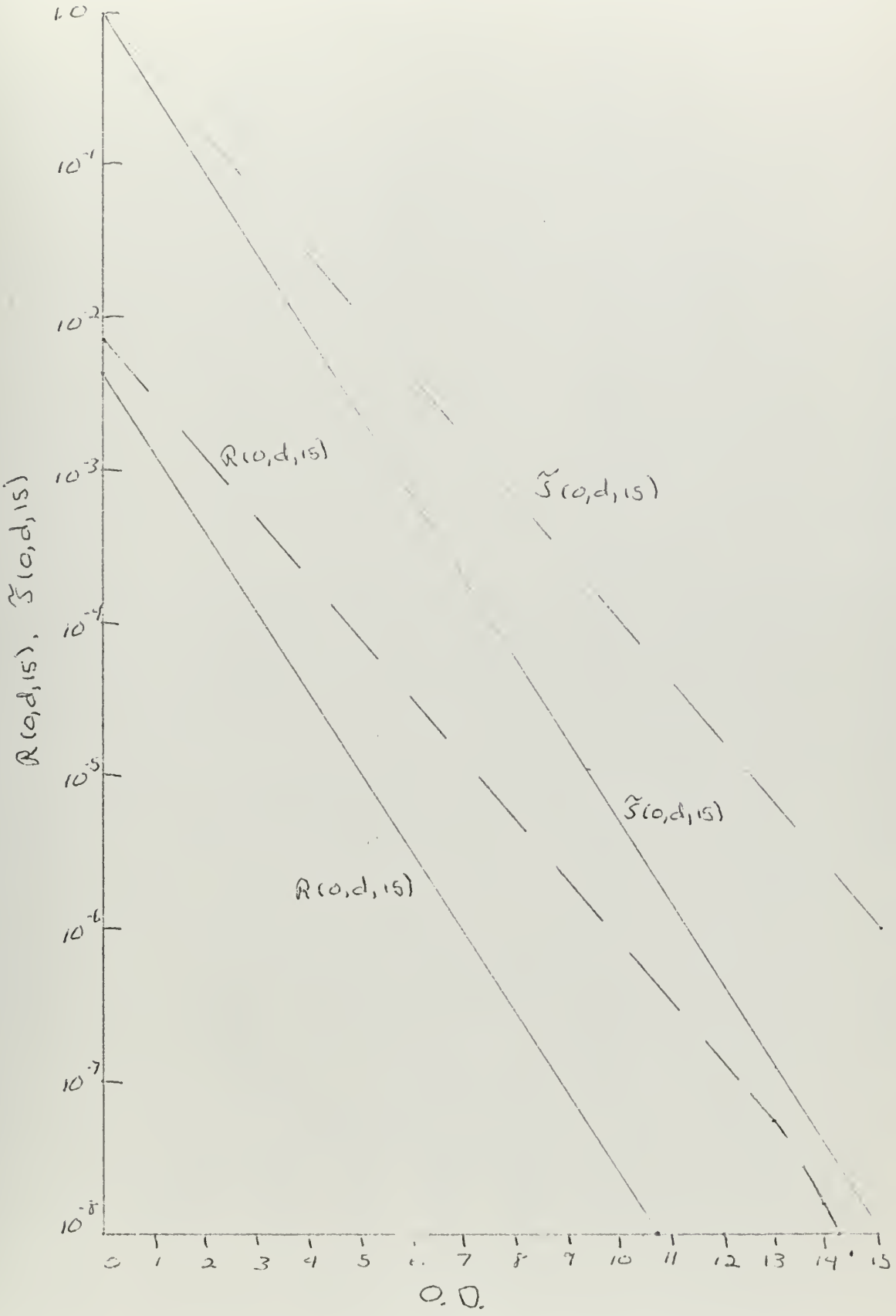


Figure 2-C. Complete Reflectance and Complete Transmittance



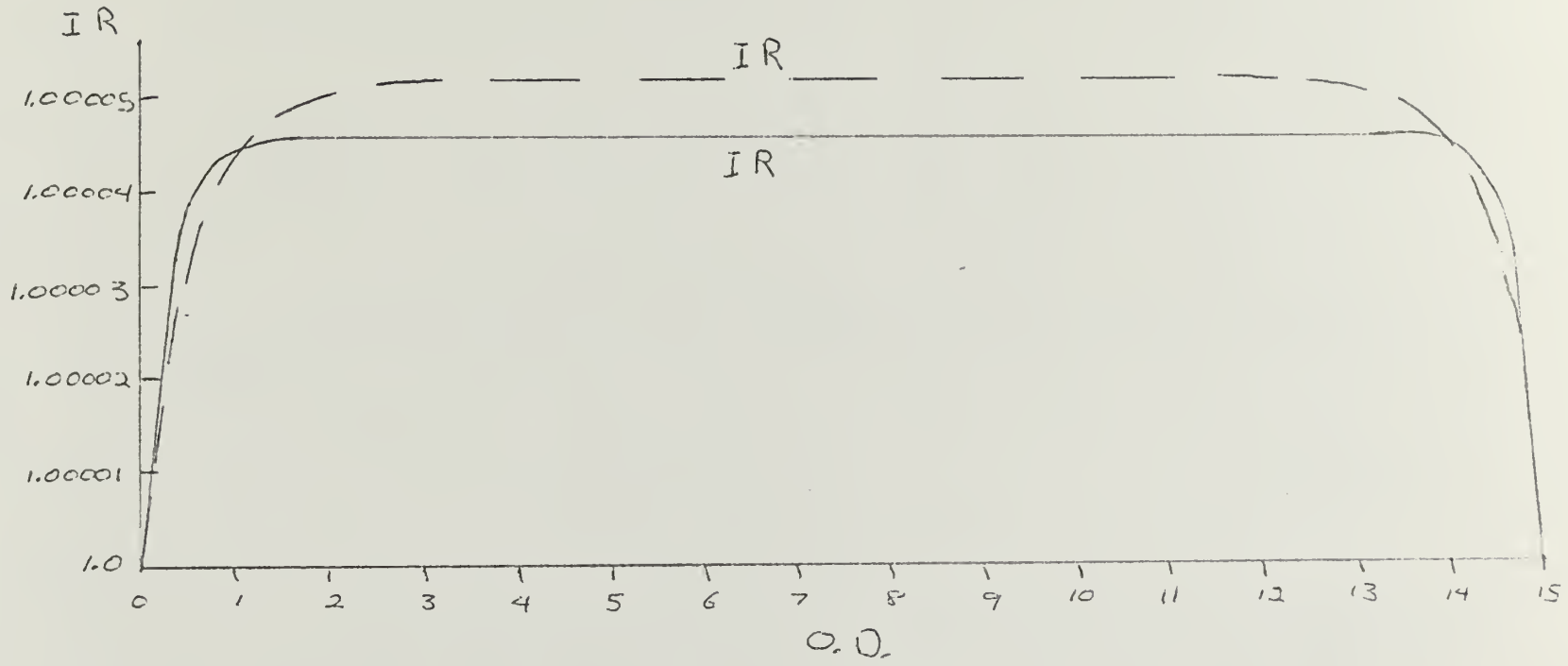


Figure 2-D. Interreflectance for Distilled Water B

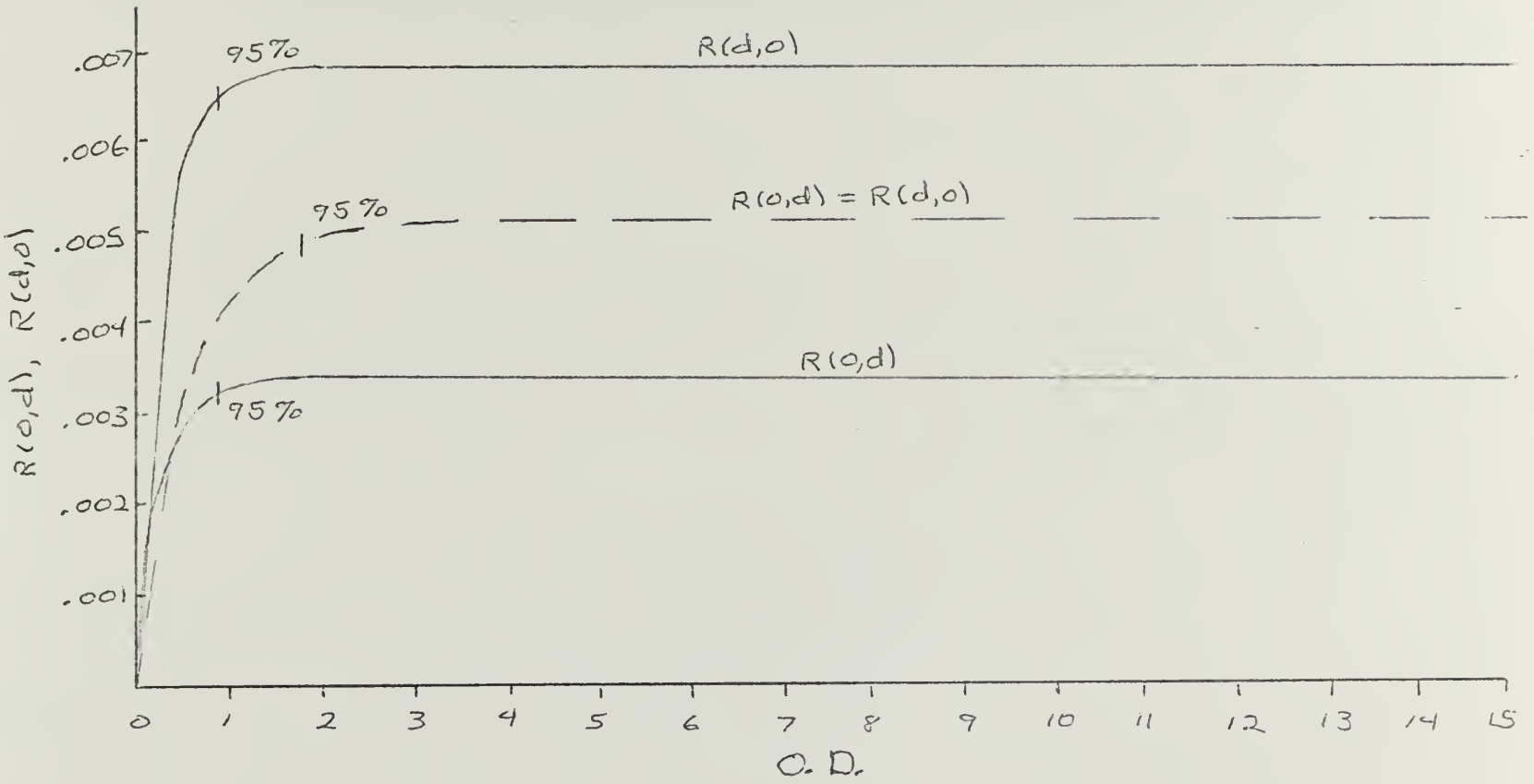


Figure 3-A. Reflectances for Pacific Coastal Water 1

Figure 3-B. Transmittances for Pacific Coastal Water 1

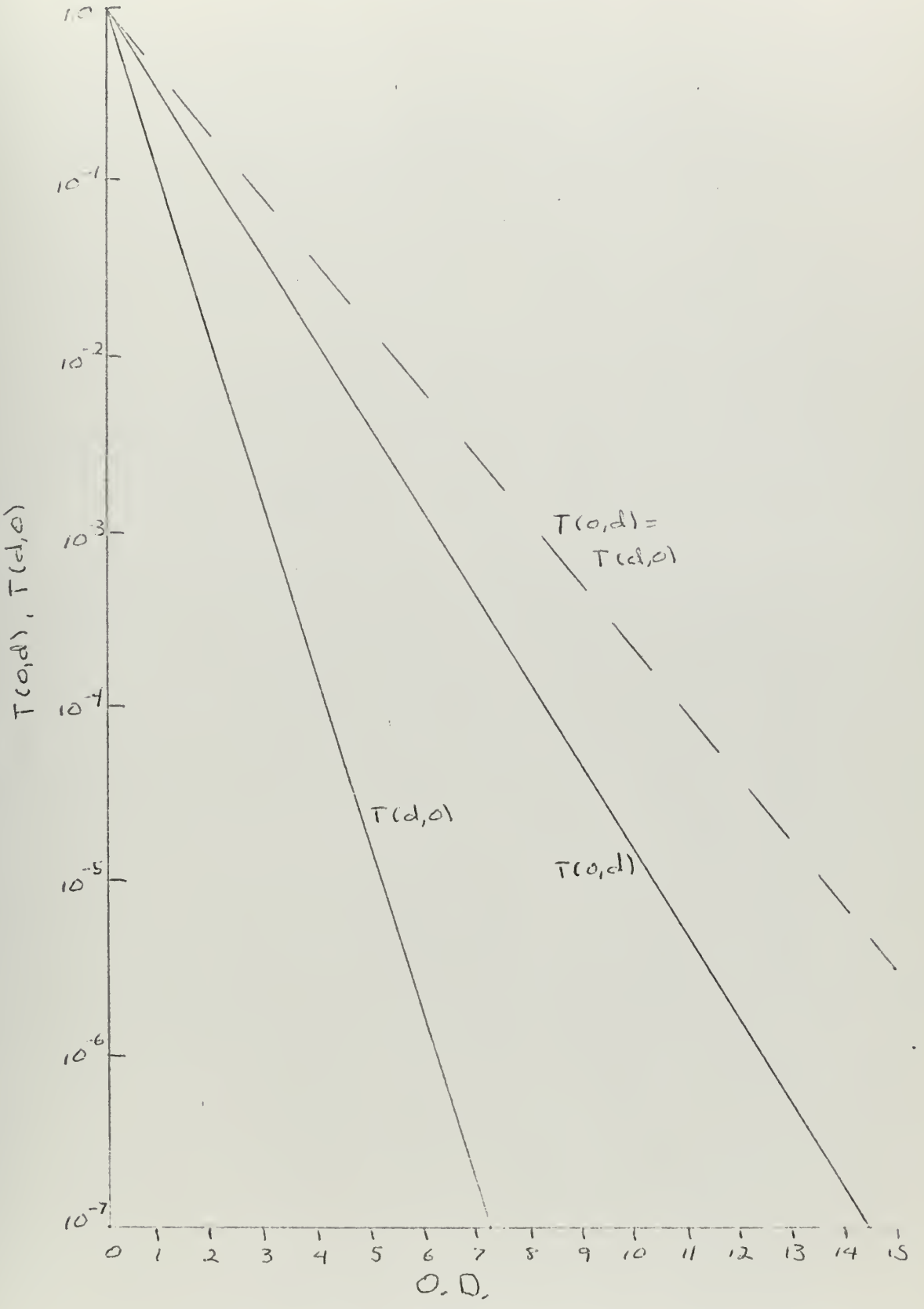
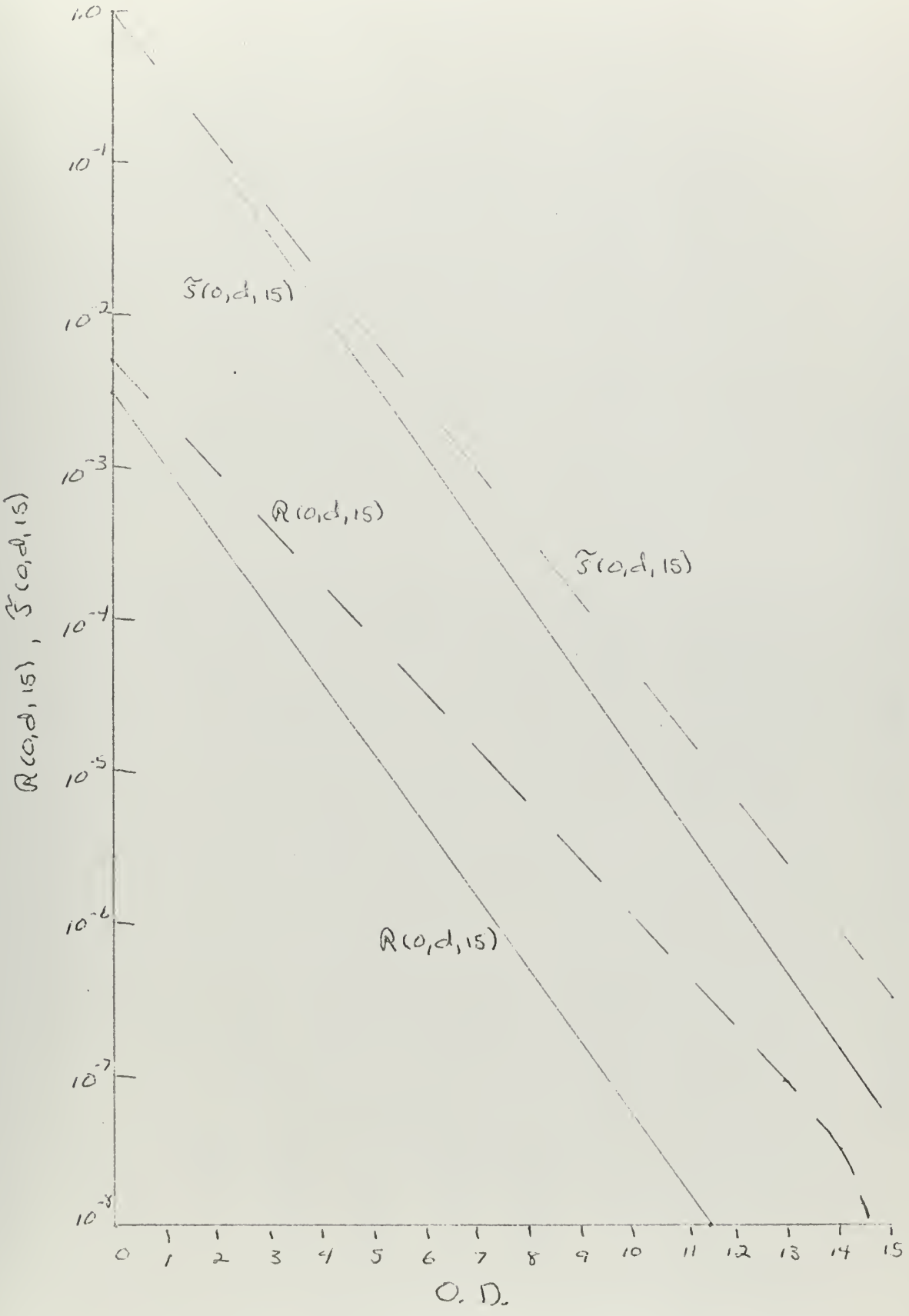


Figure 3-C. Complete Reflectance and Complete Transmittance



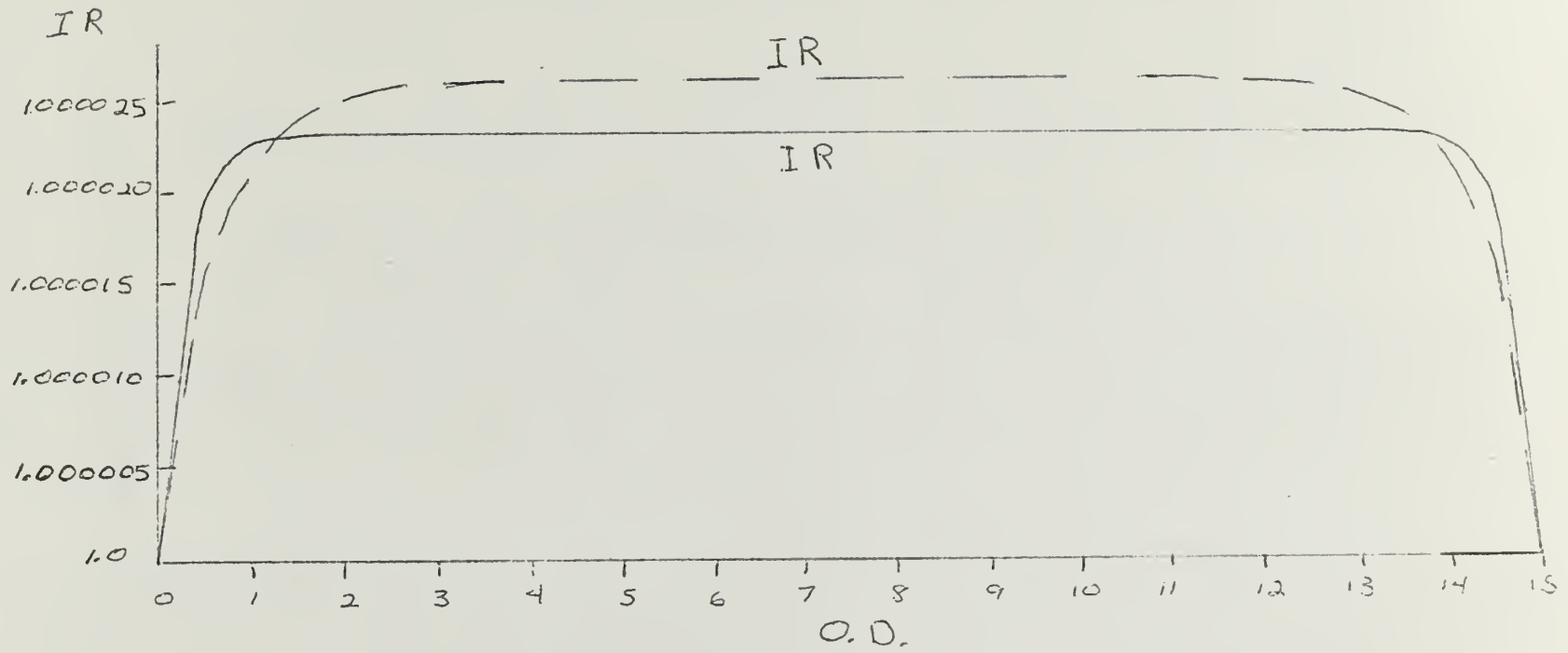


Figure 3-D. Interreflectance for Pacific Coastal Water 1

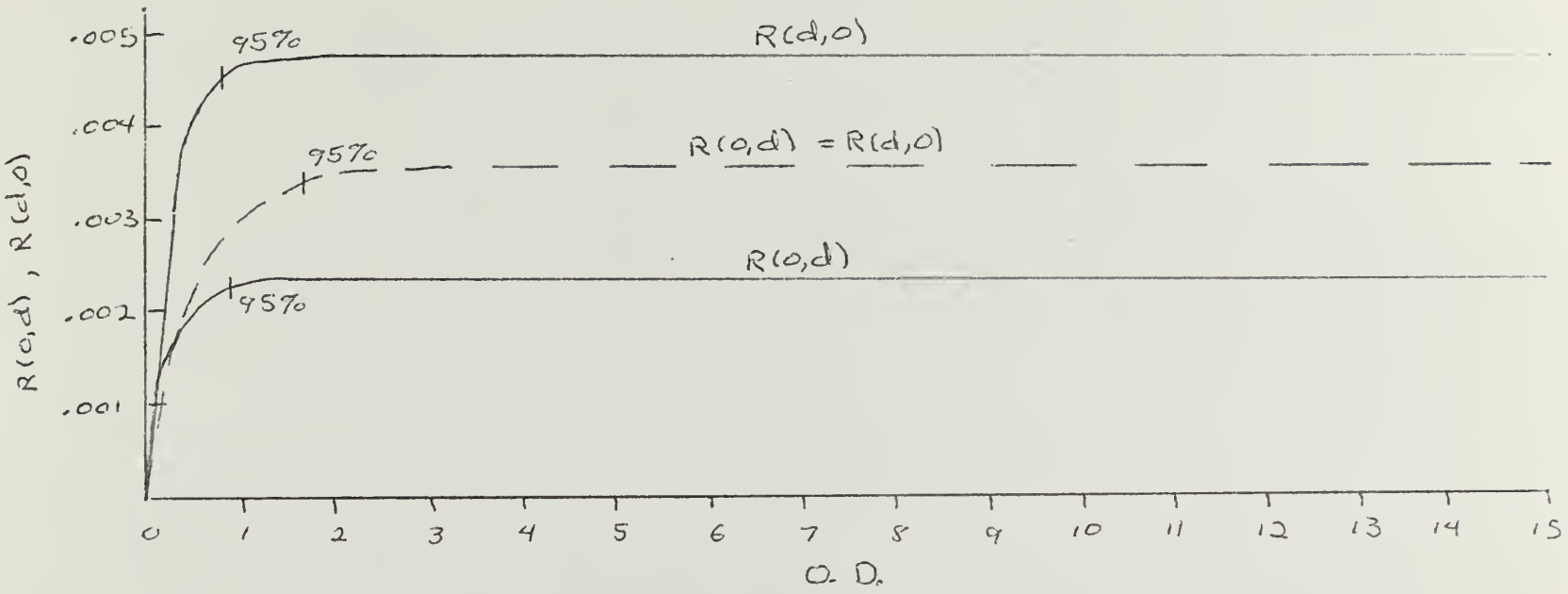


Figure 4-A. Reflectances for Pacific Coastal Water 2

Figure 4-B. Transmittances for Pacific Coastal Water 2

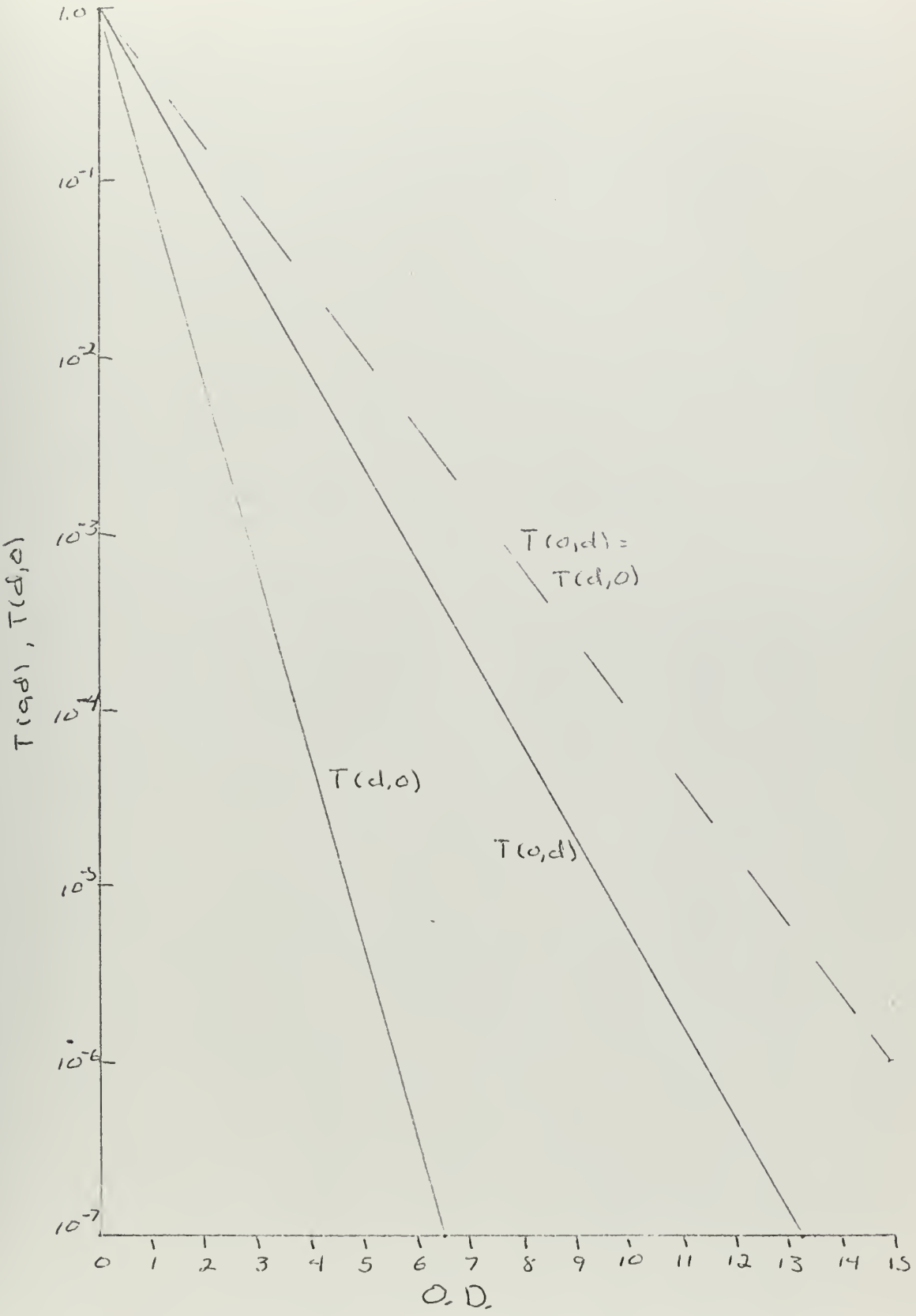
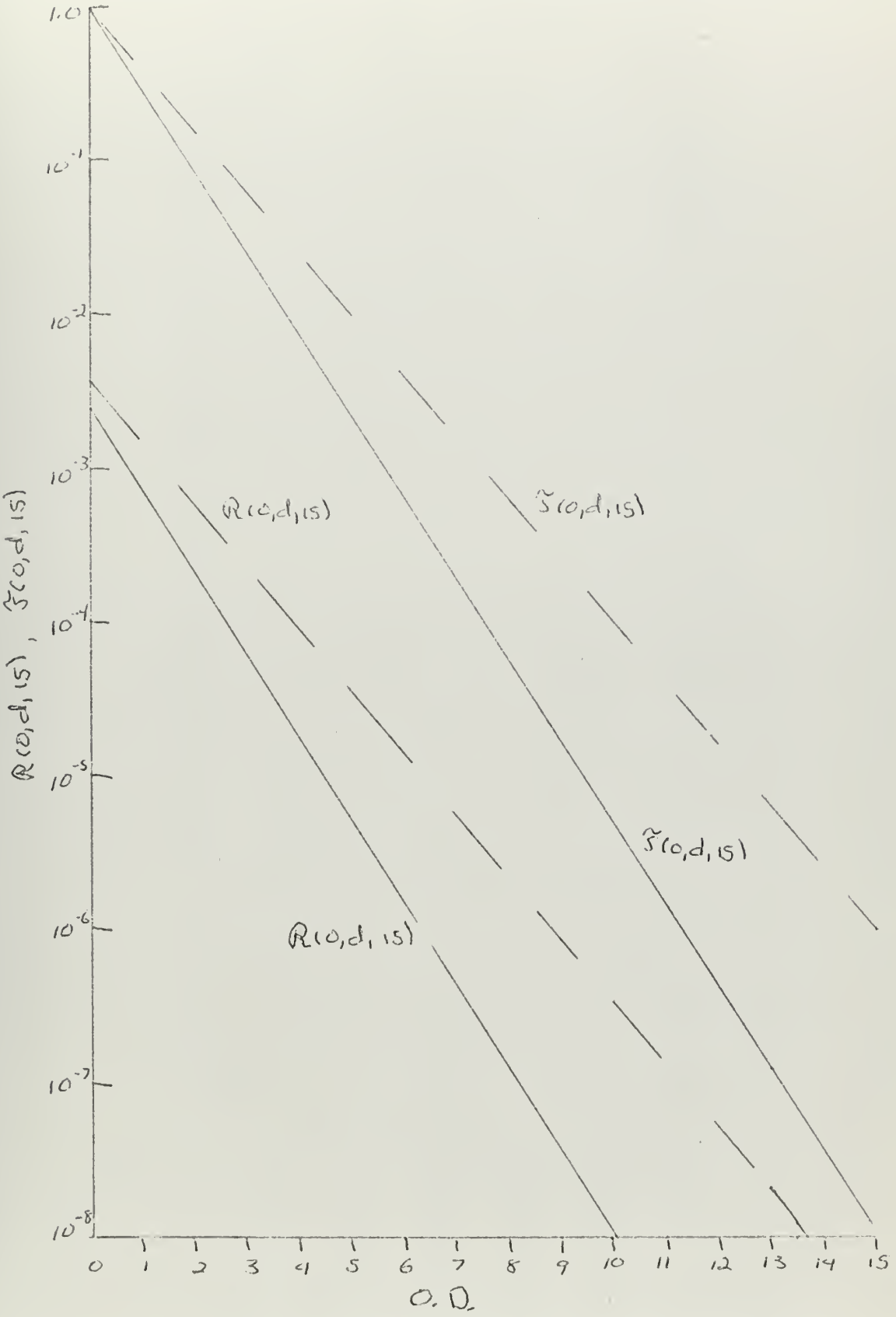


Figure 4-C. Complete Reflectance and Complete Transmittance



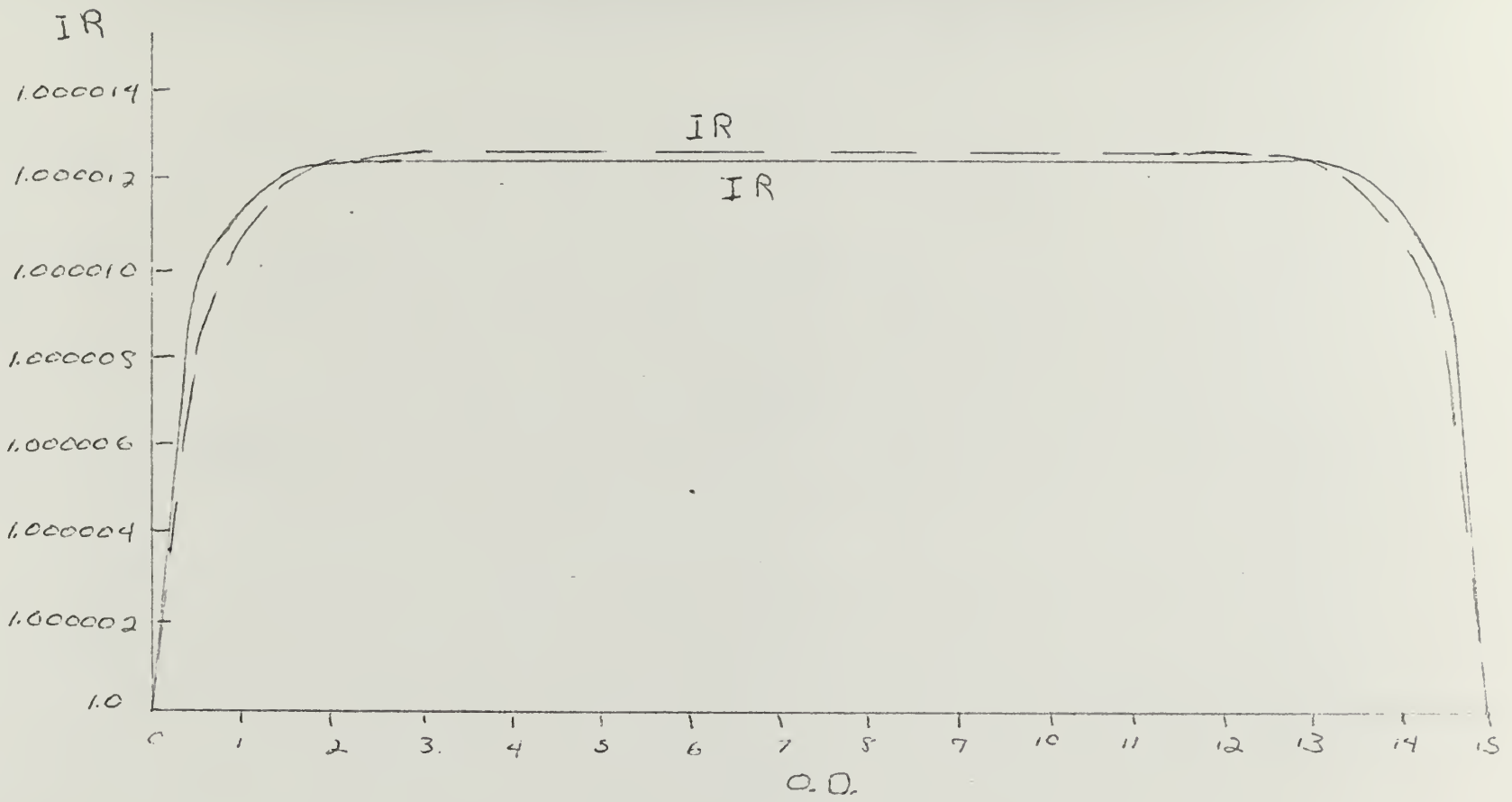


Figure 4-D. Interreflectance for Pacific Coastal Water 2

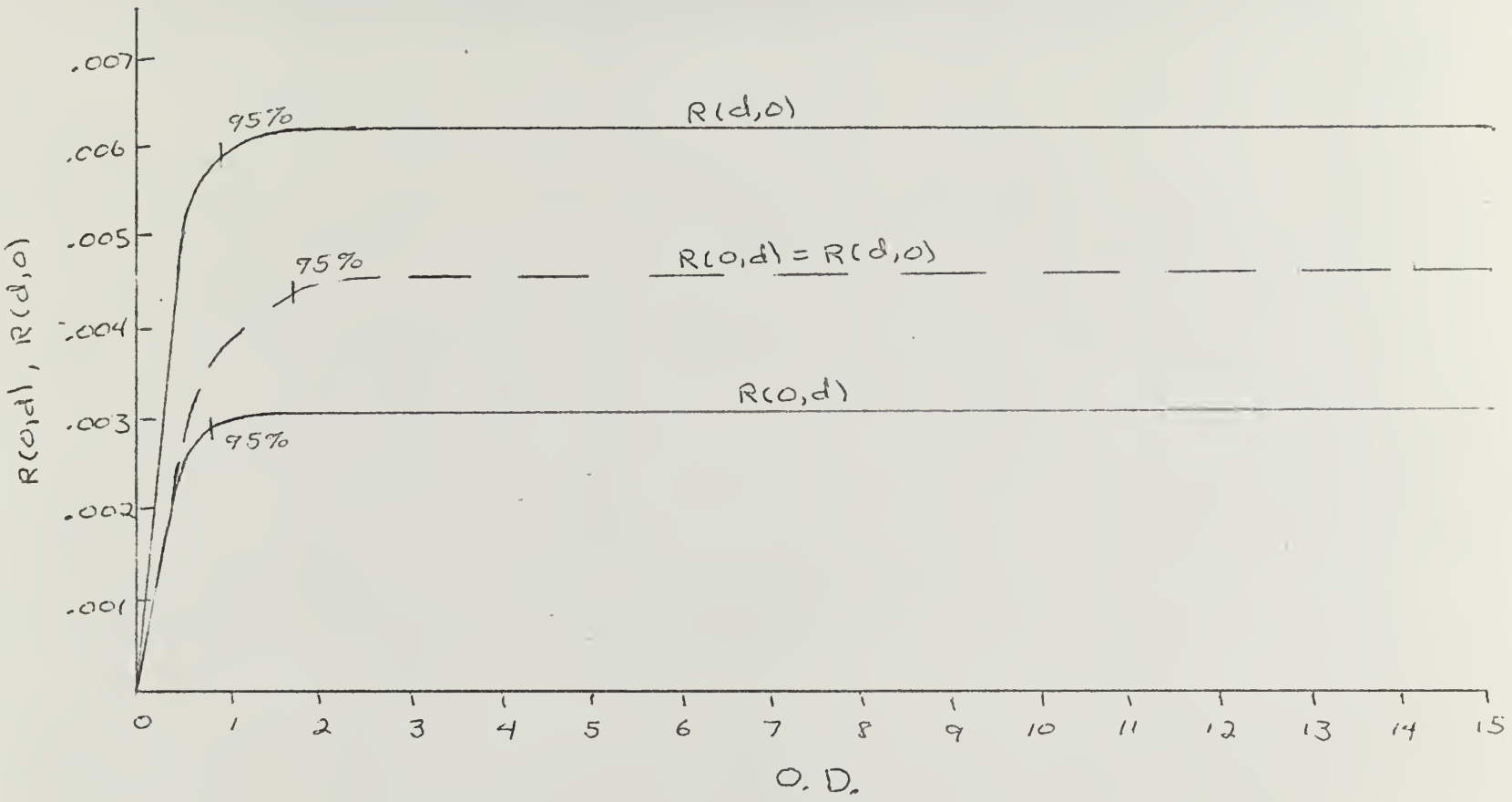


Figure 5-A. Reflectances for Pacific Coastal Water 3

Figure 5-B. Transmittances for Pacific Coastal Water 3

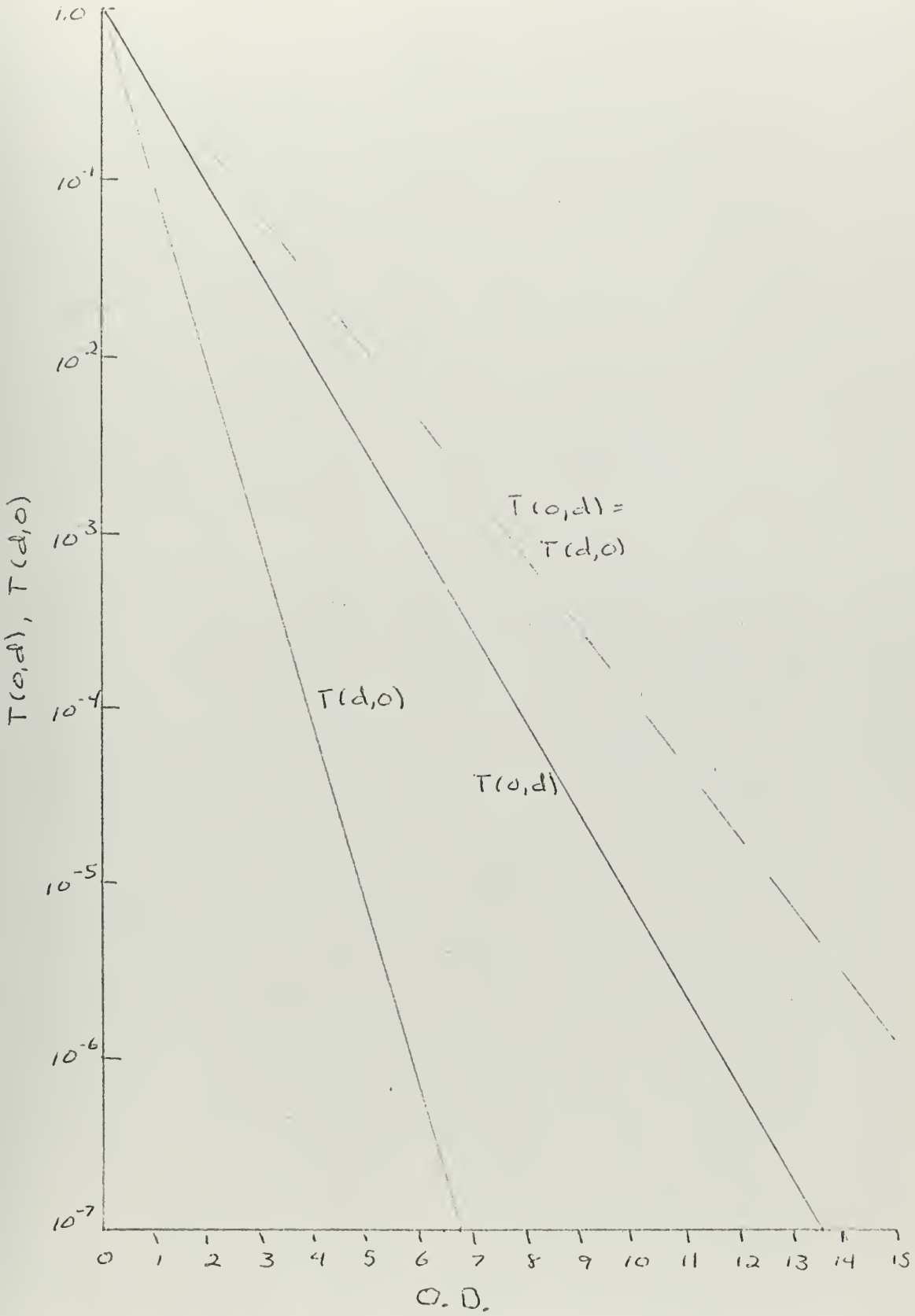
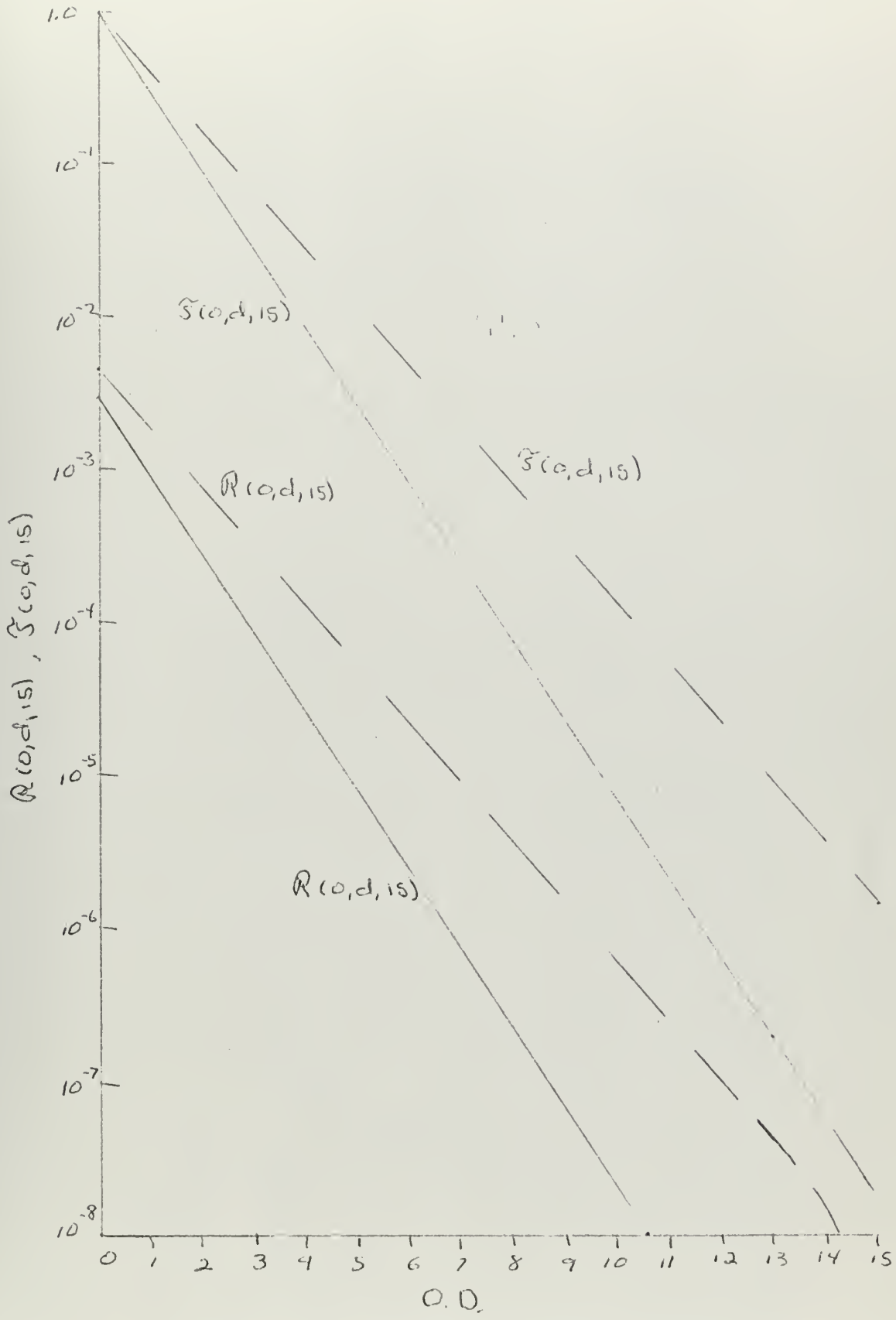


Figure 5-C. Complete Reflectance and Complete Transmittance



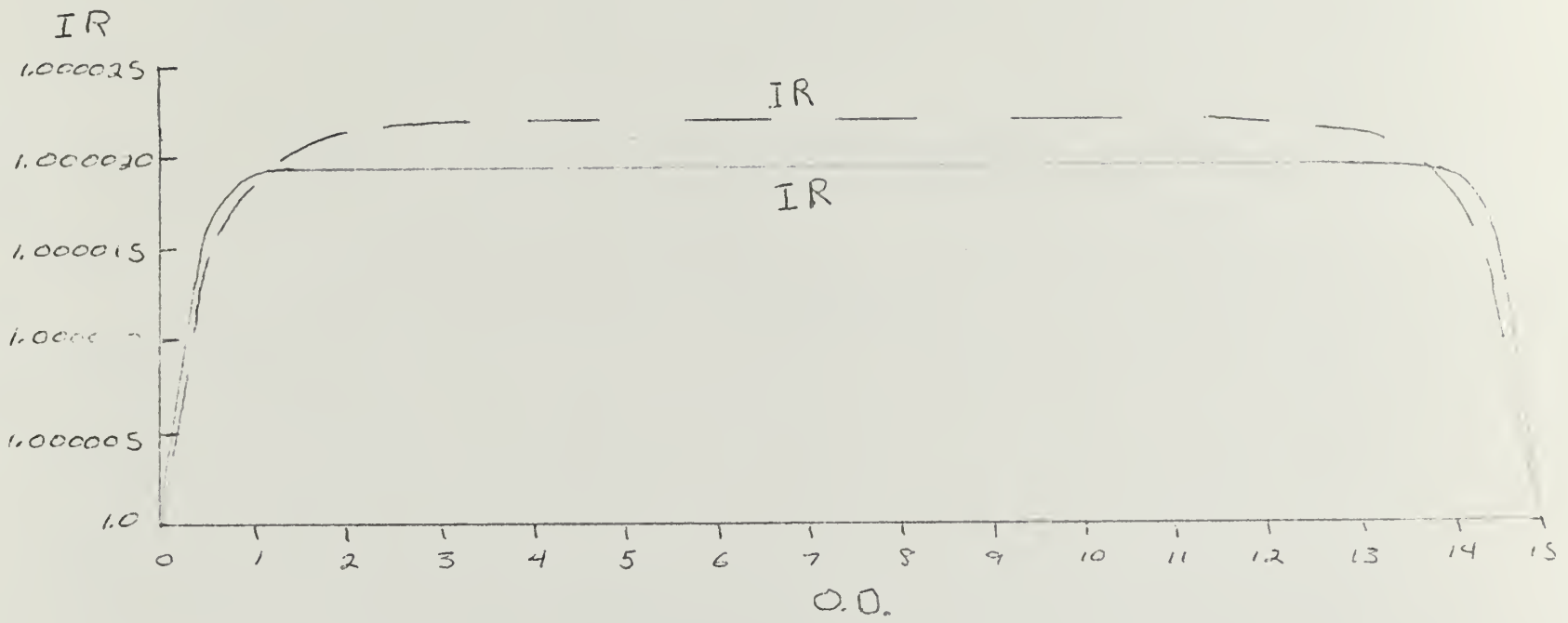


Figure 5-D. Interreflectance for Pacific Coastal Water 3

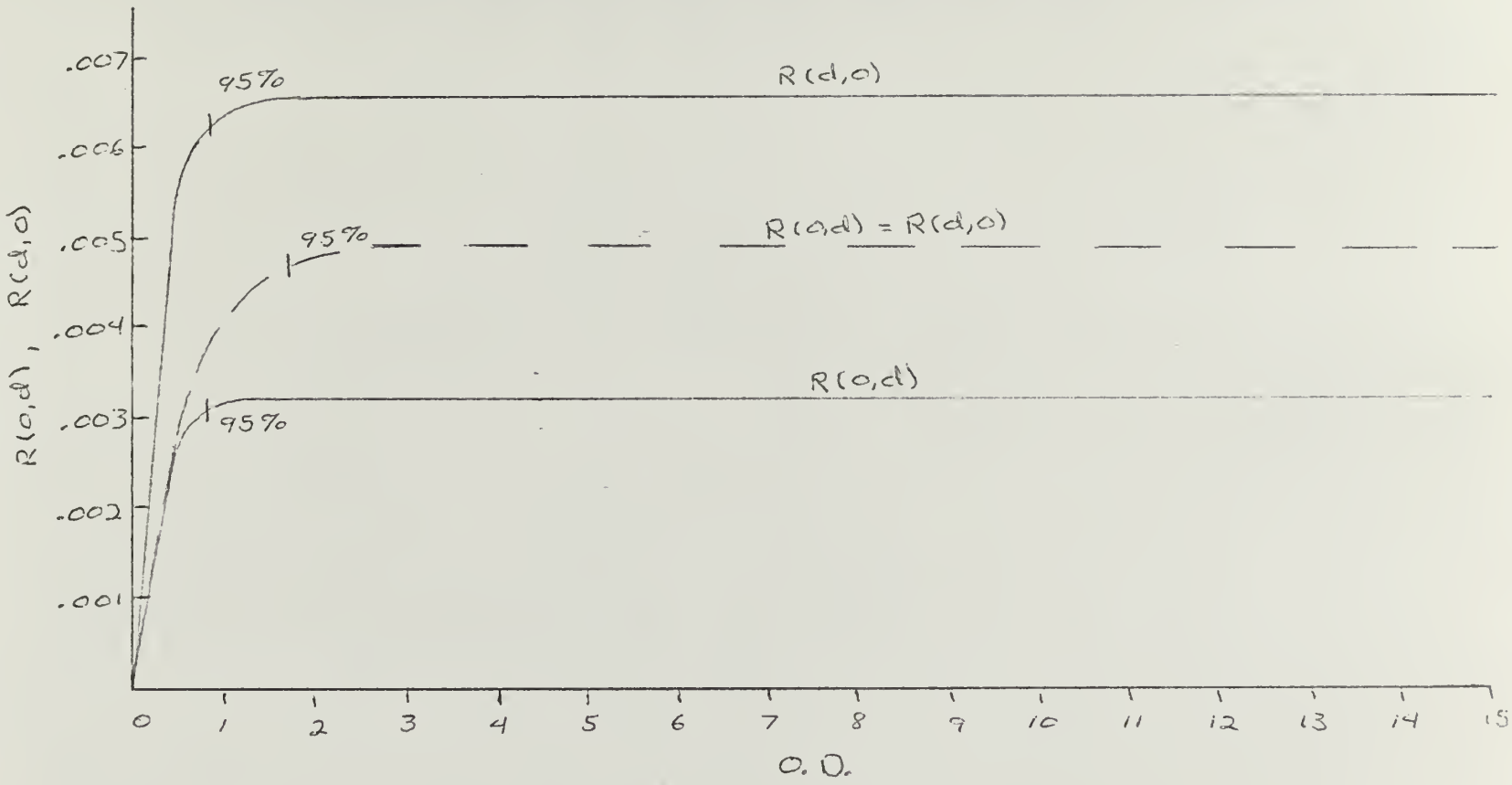


Figure 6-A. Reflectances for Pacific Coastal Water 4

Figure 6-B. Transmittances for Pacific Coastal Water 4

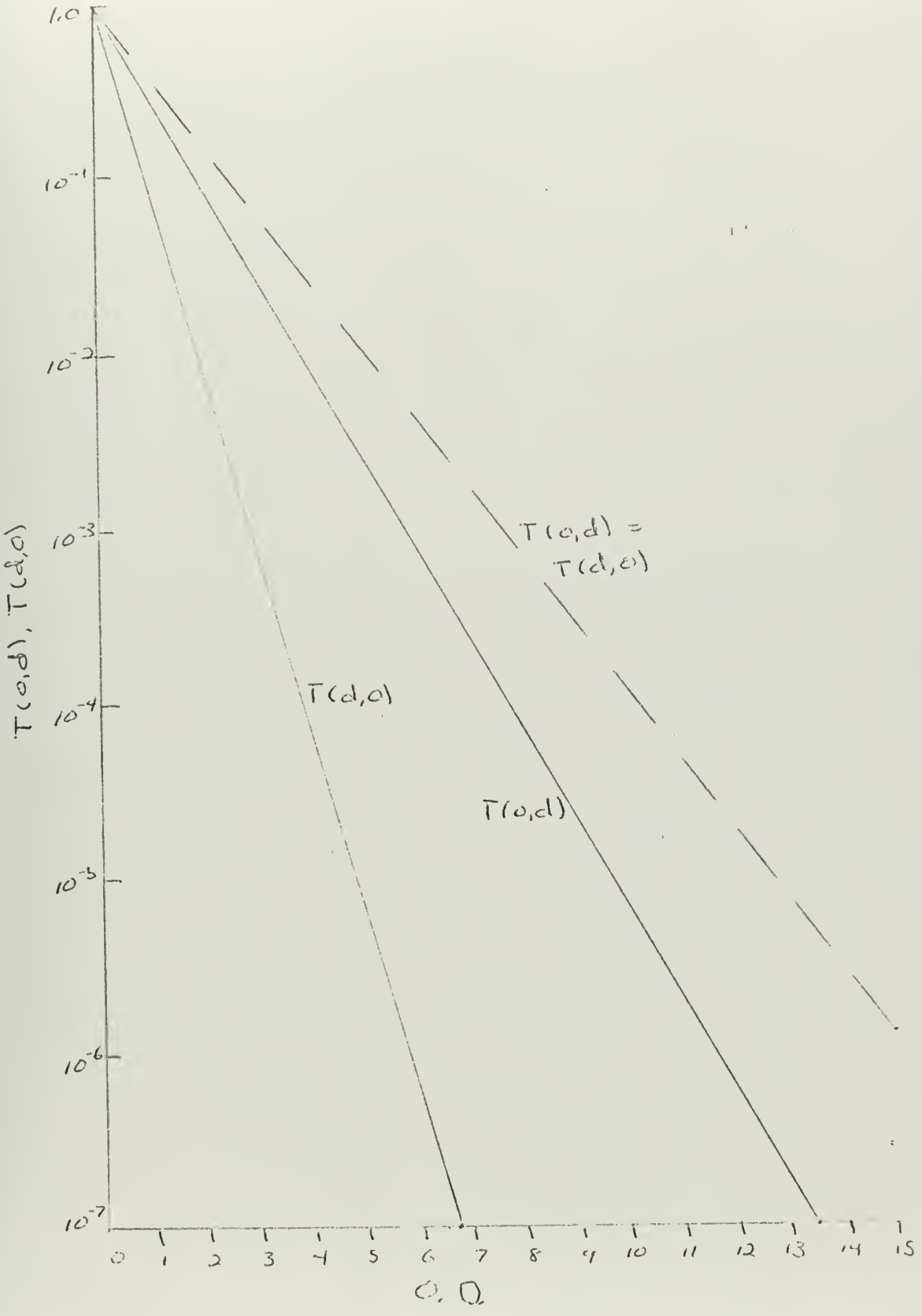
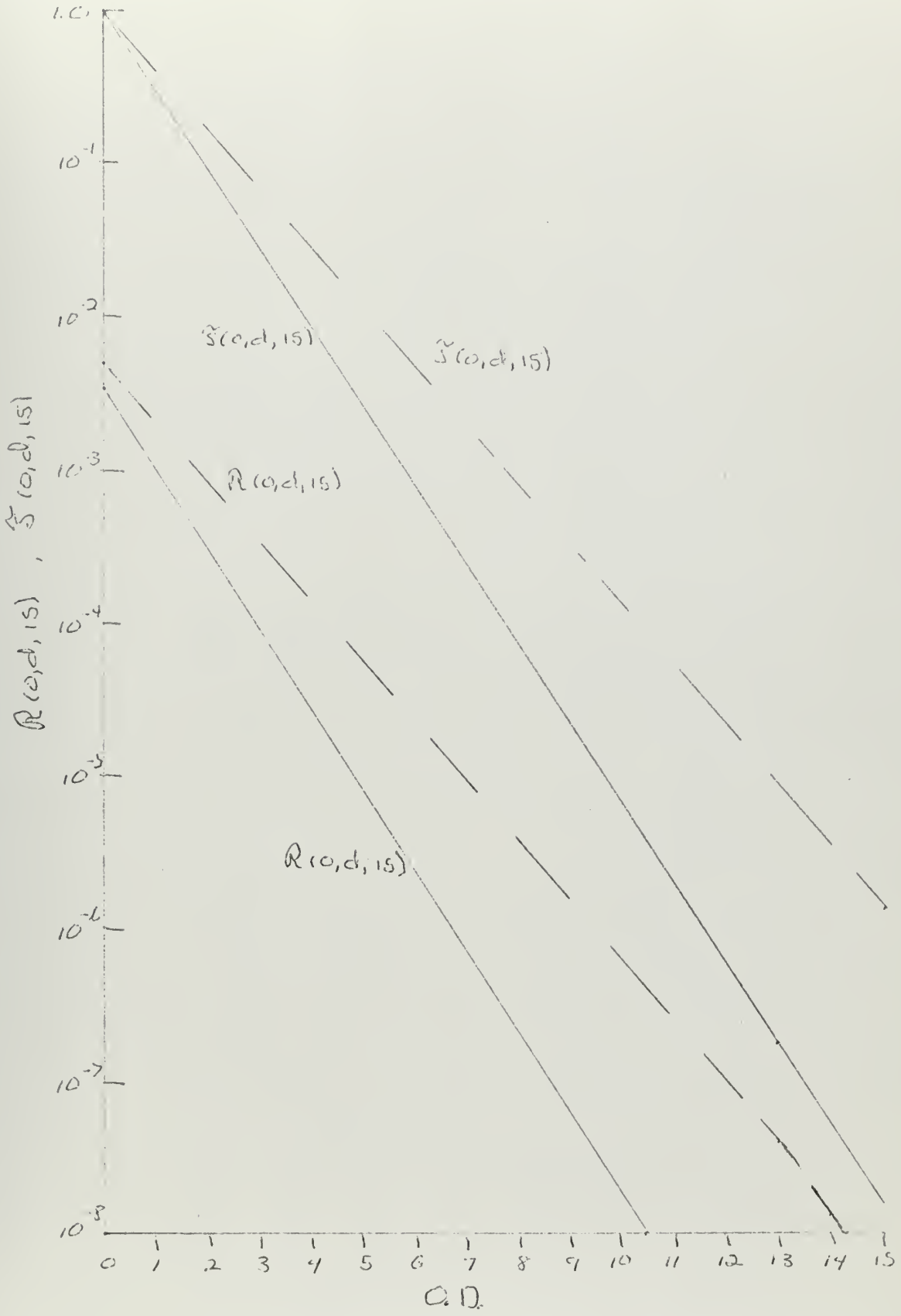


Figure 6-C. Complete Reflectance and Complete Transmittance



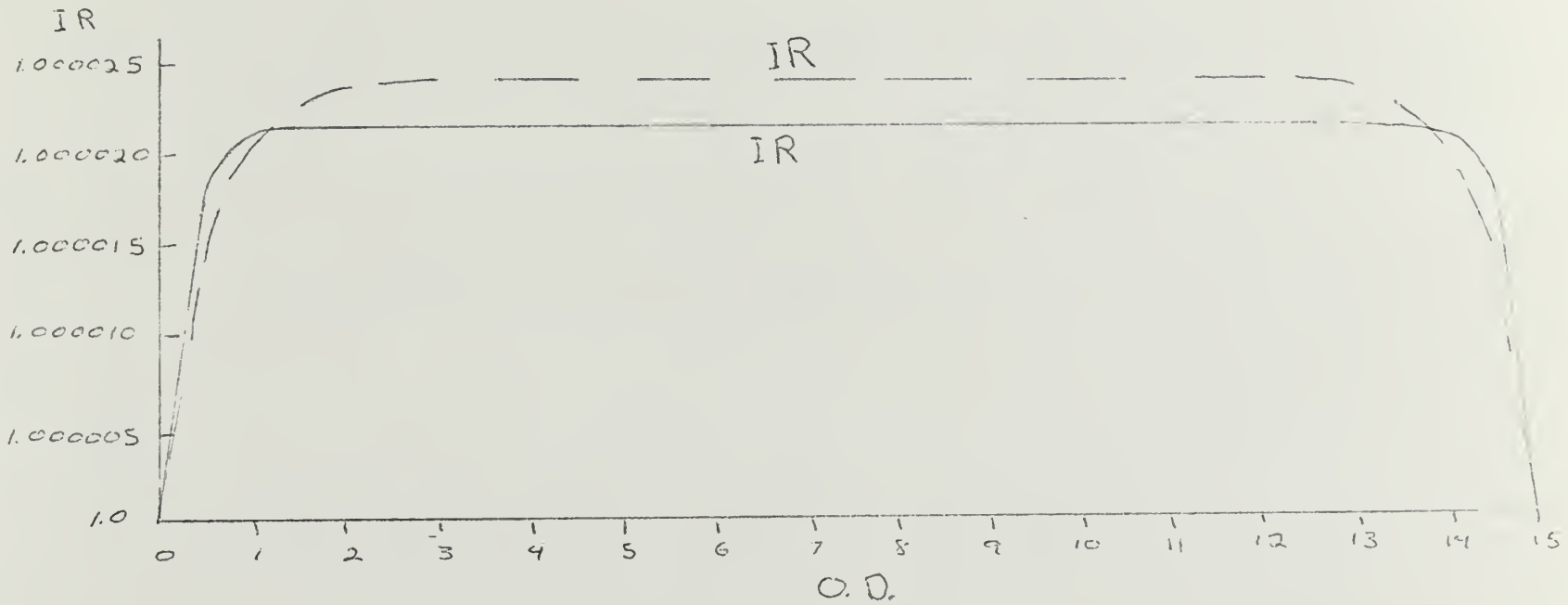


Figure 6-D. Interreflectance for Pacific Coastal Water 4

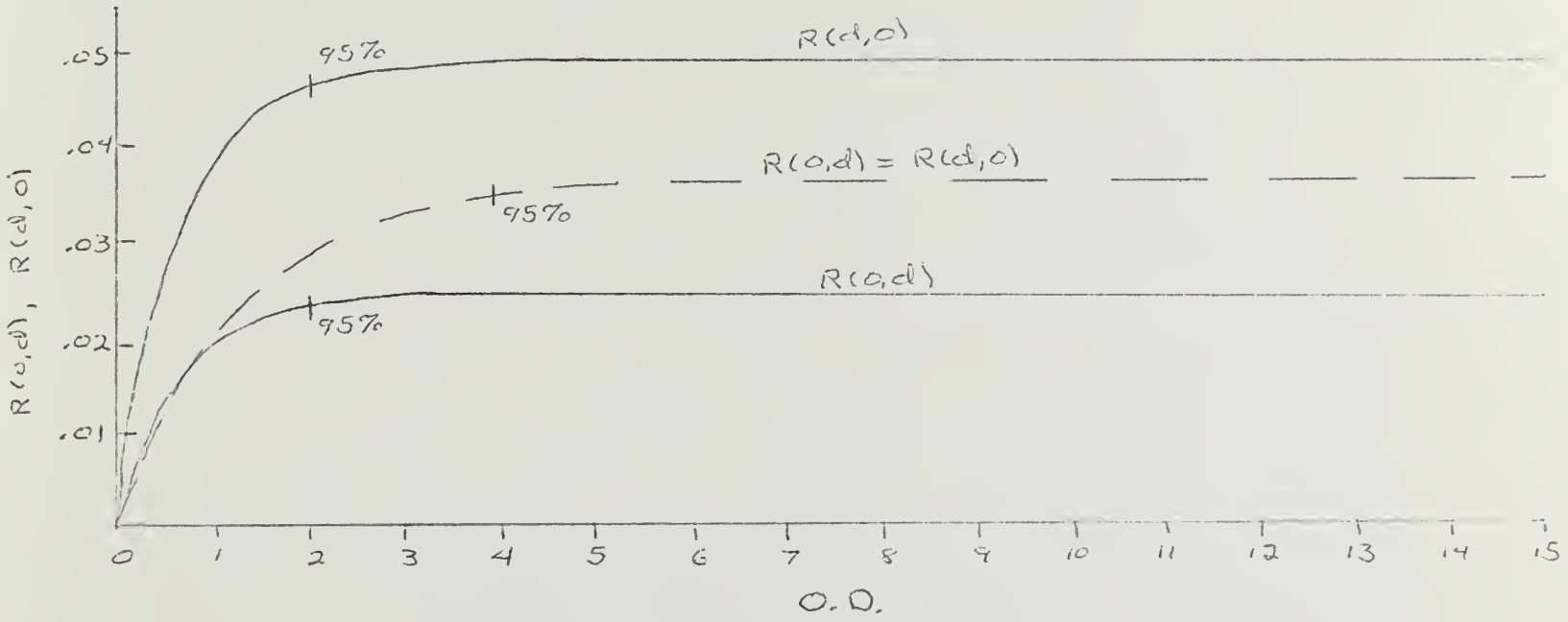


Figure 7-A. Reflectances for Lake Pend Oreille 1

Figure 7-B. Transmittances for Lake Pend Oreille 1

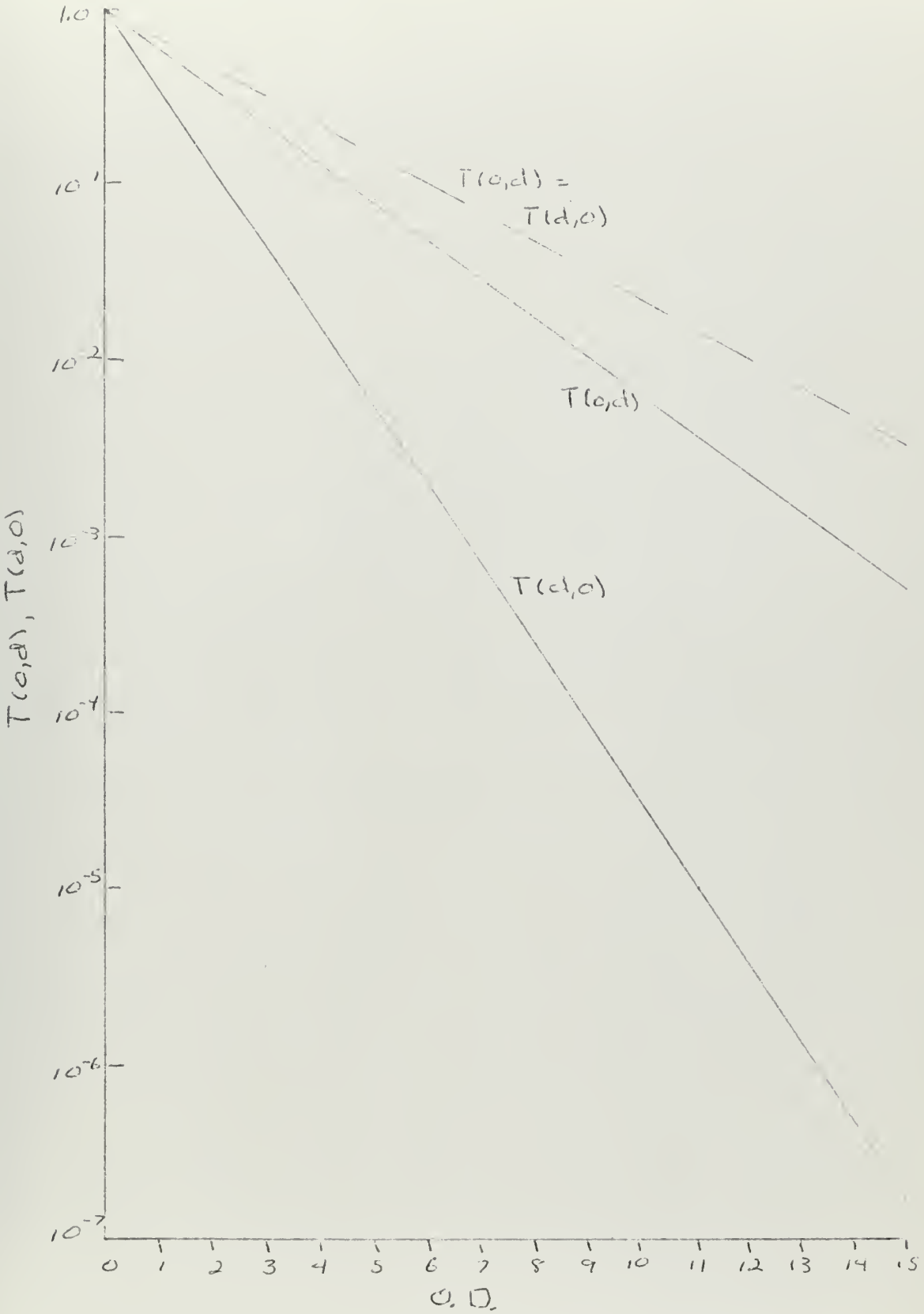
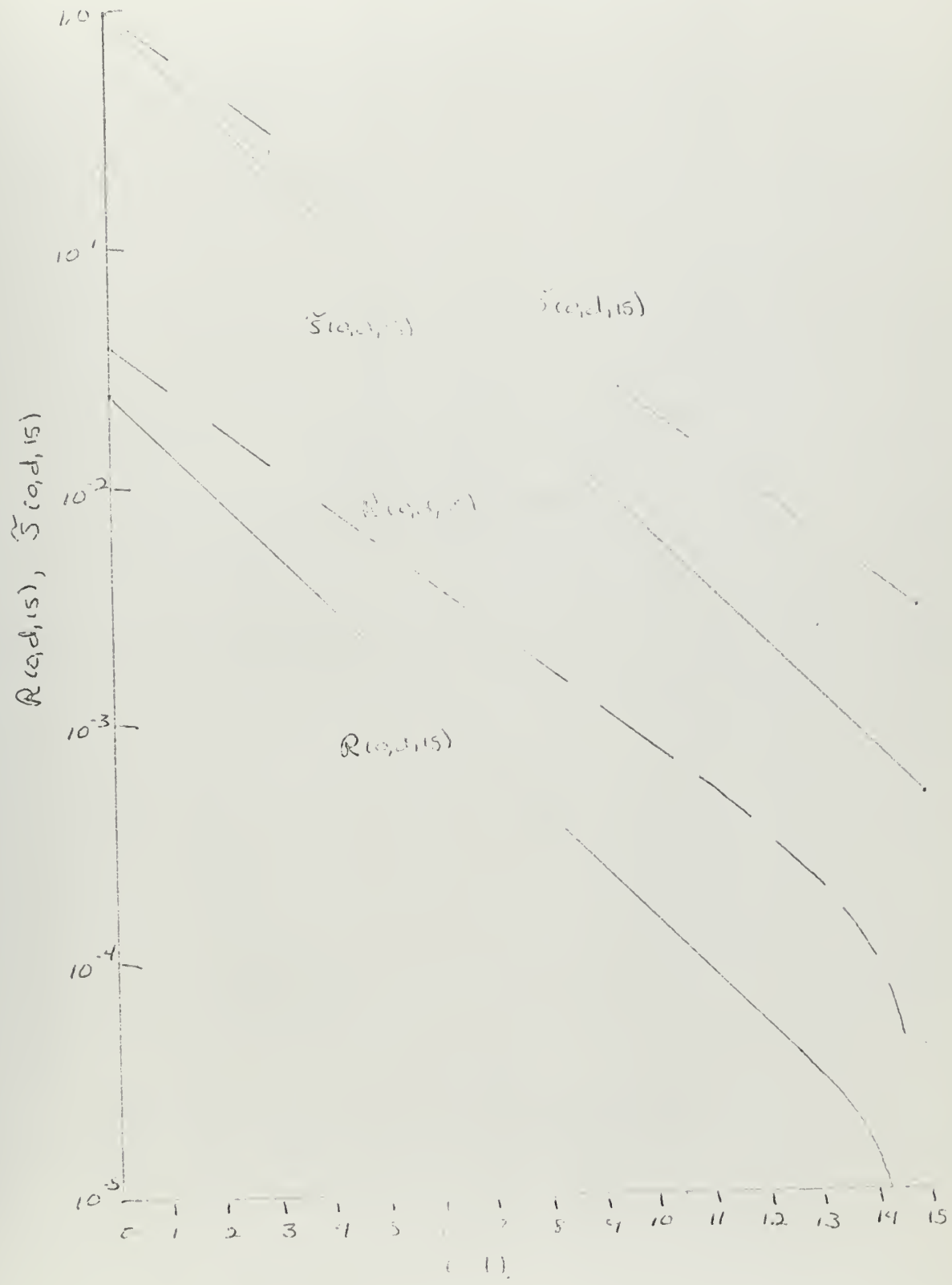


Figure 7-C. Complete Reflectance and Complete Transmittance



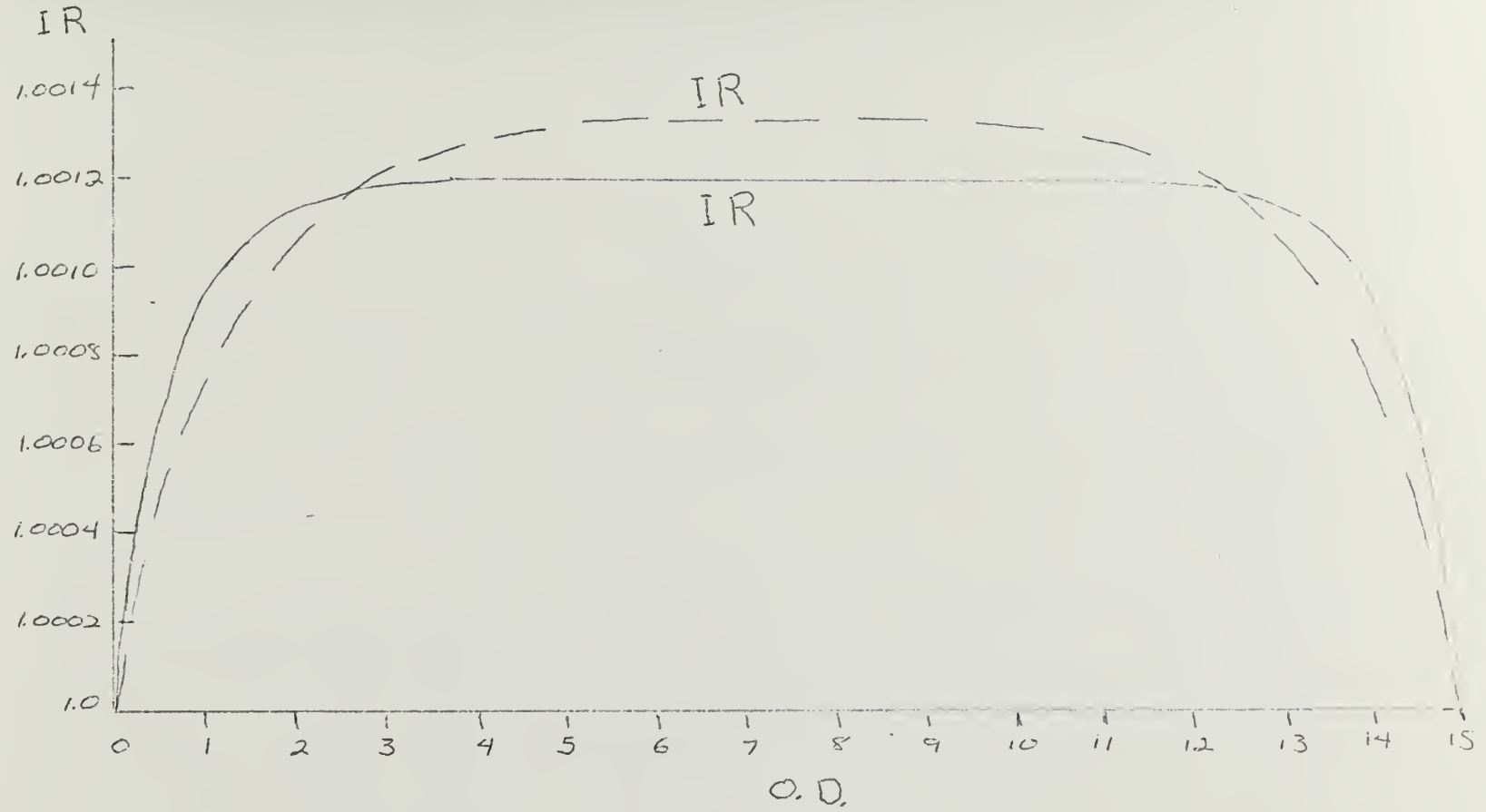


Figure 7-D. Interreflectance for Lake Pend Oreille 1

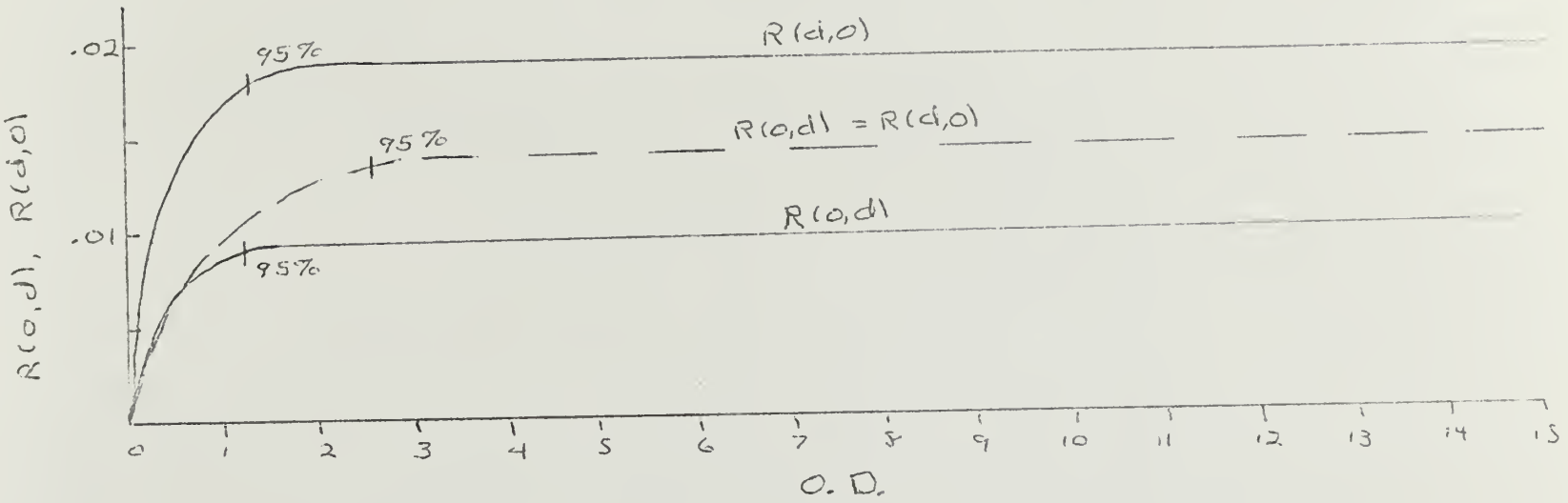


Figure 8-A. Reflectances for Lake Pend Oreille 2

Figure 8-B. Transmittances for Lake Pend Oreille 2

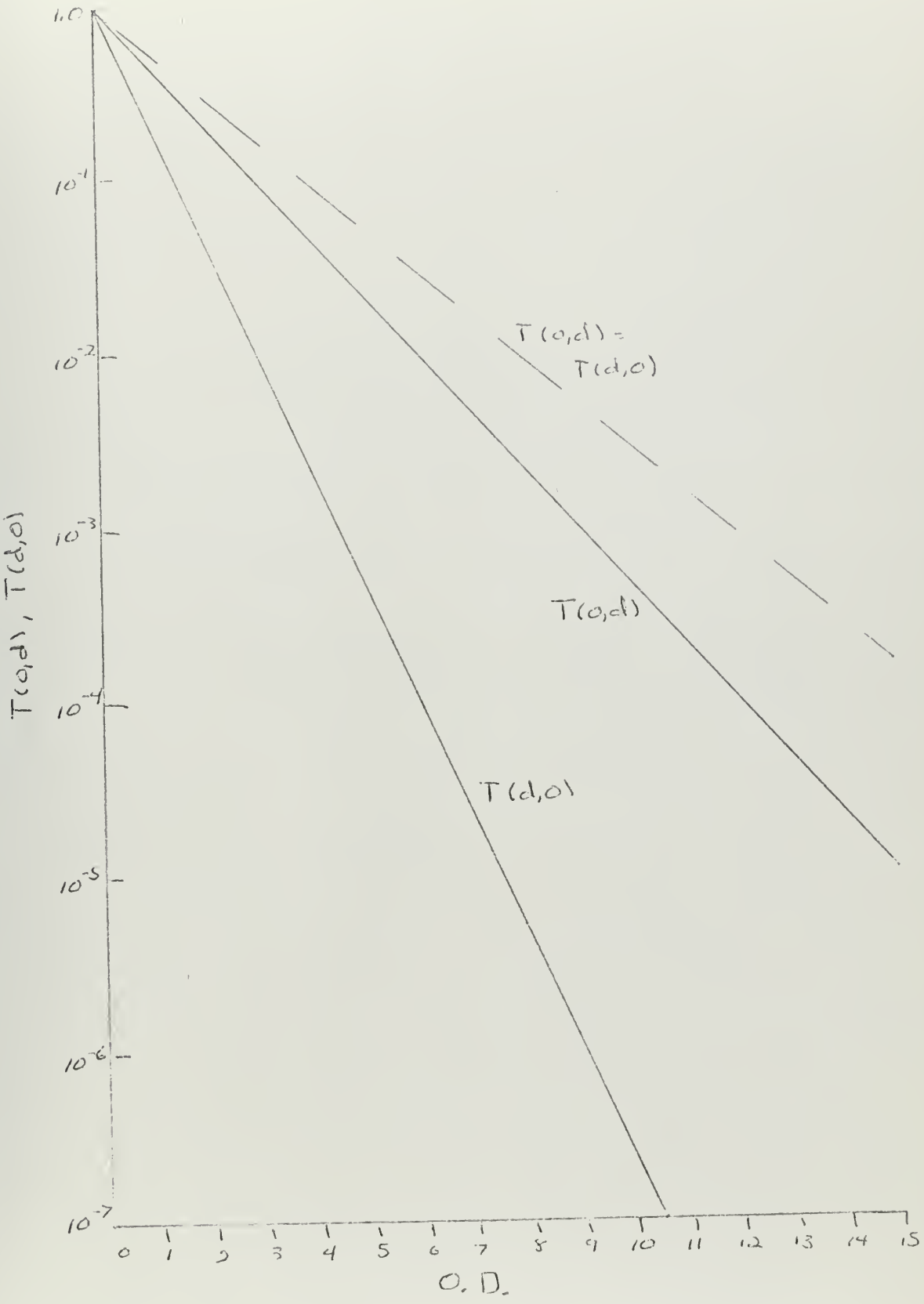
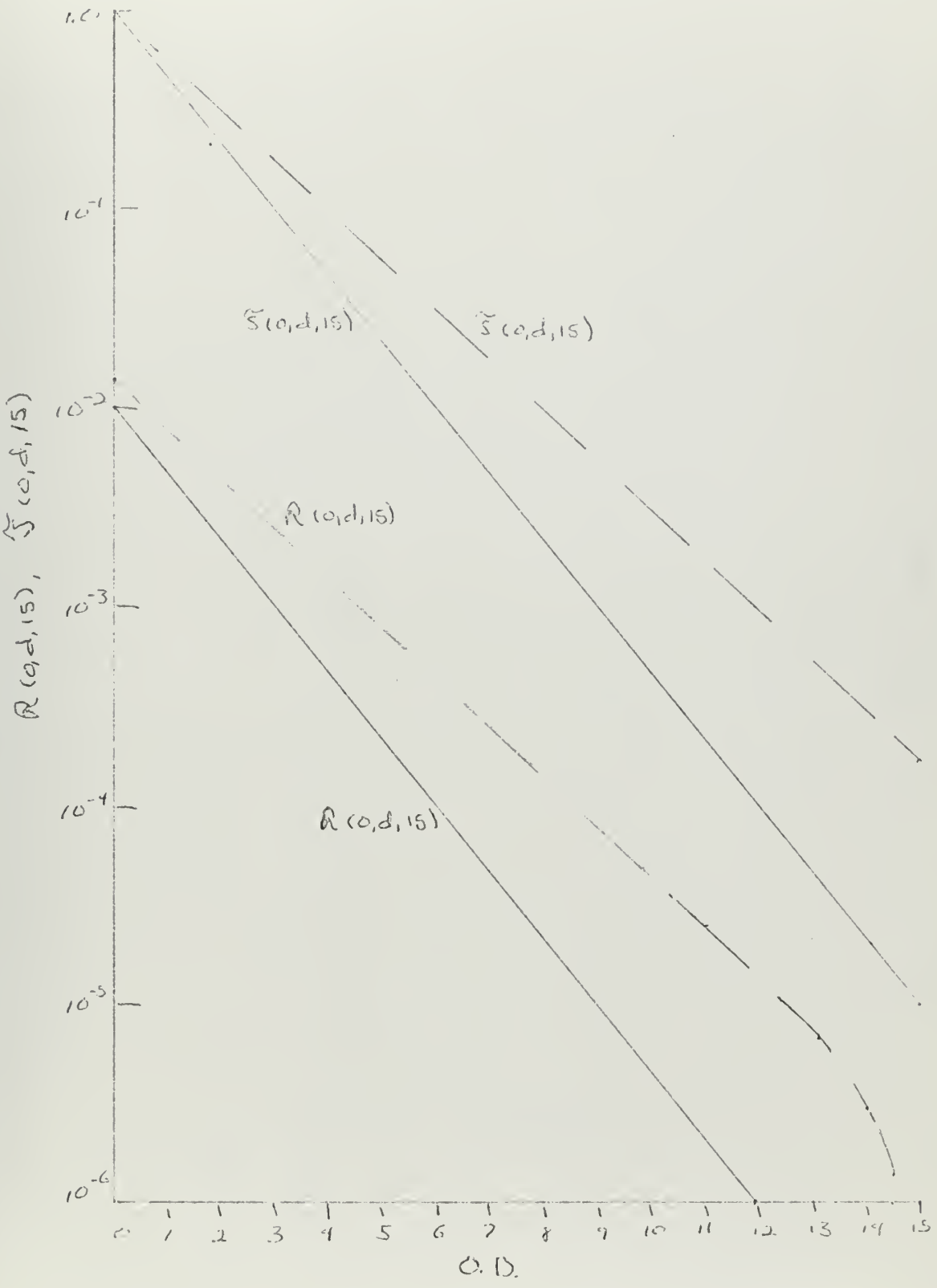


Figure 8-C. Complete Reflectance and Complete Transmittance



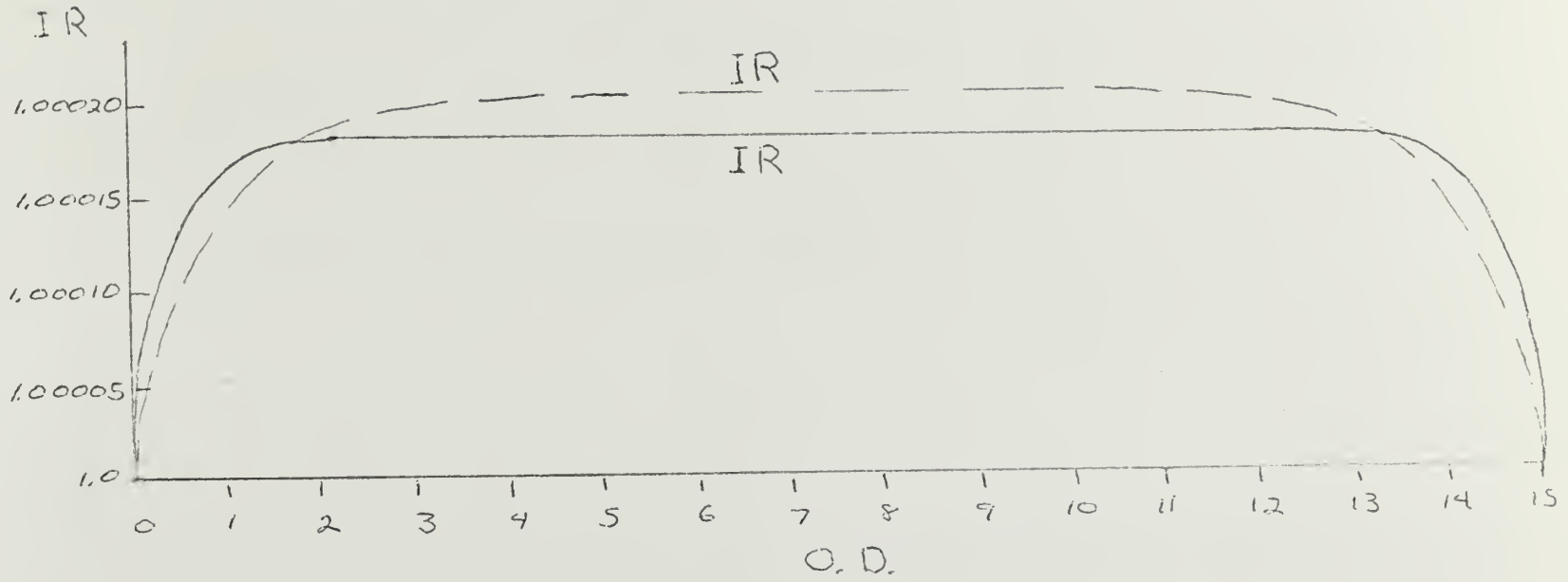


Figure 8-D. Interreflectance for Lake Pend Oreille 2

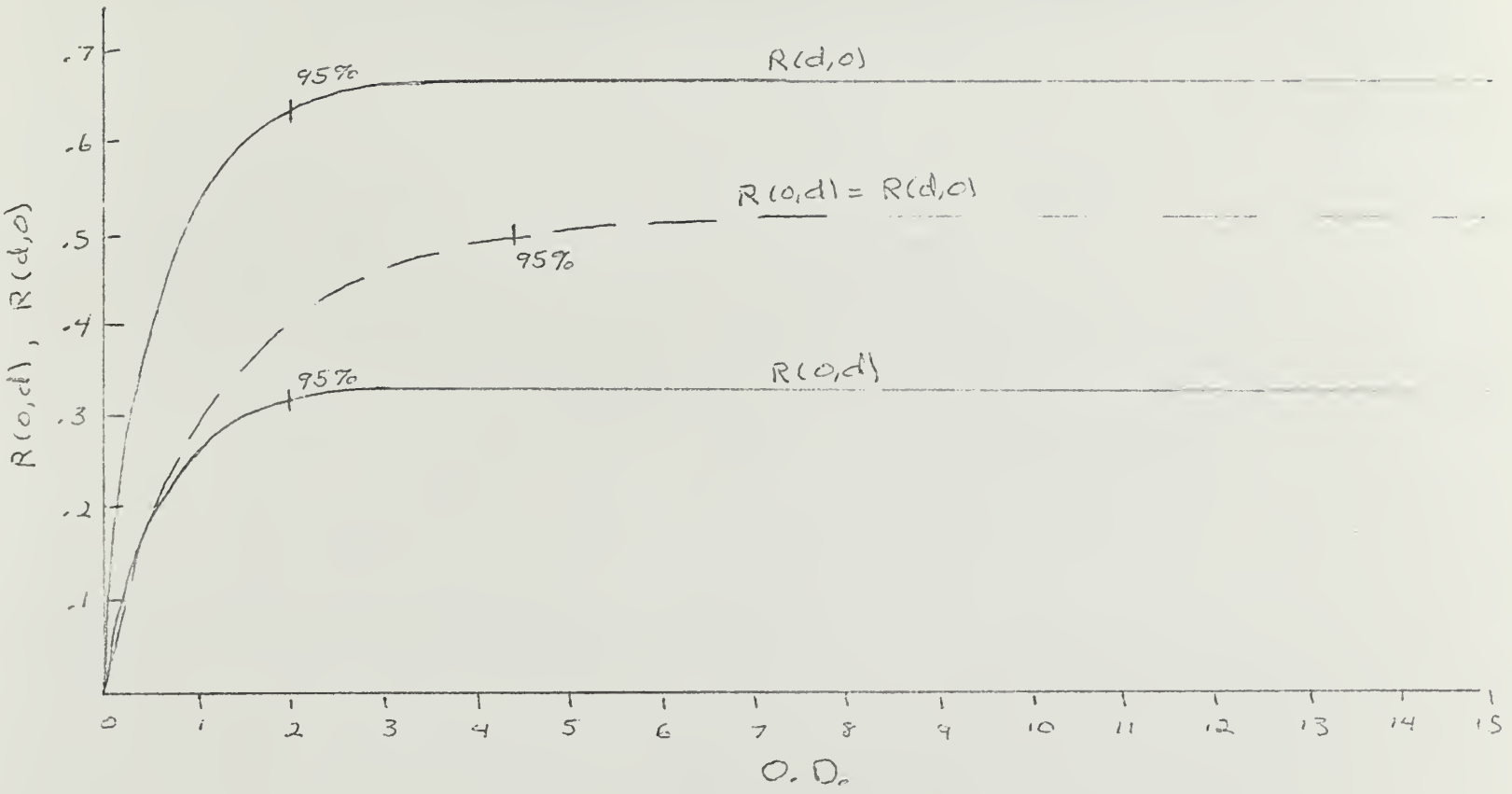


Figure 9-A. Reflectances for Hypothetical Case 1

Figure 9-B. Transmittances for Hypothetical Case 1

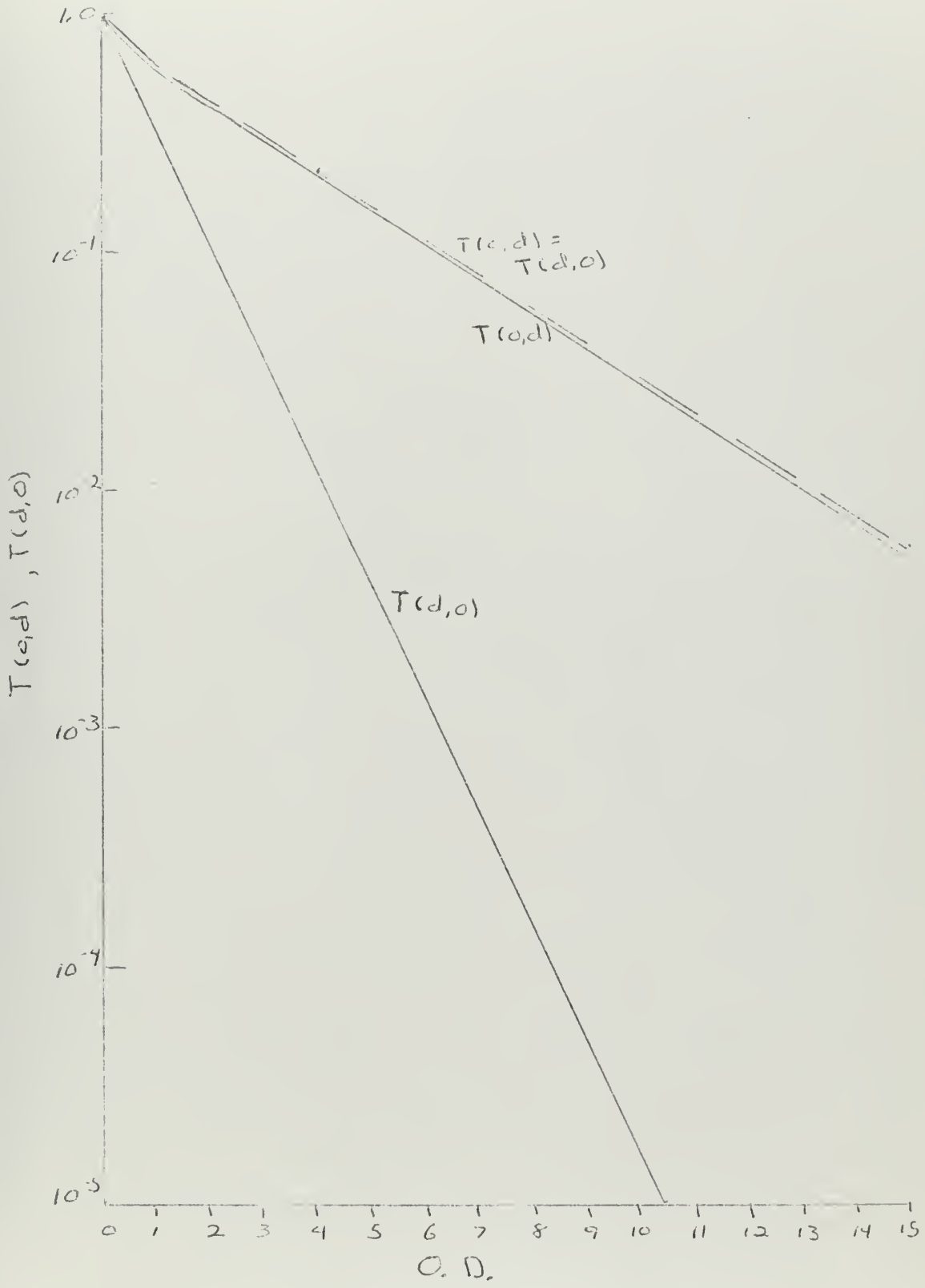


Figure 9-C. Complete Reflectance and Truncated Reflectance

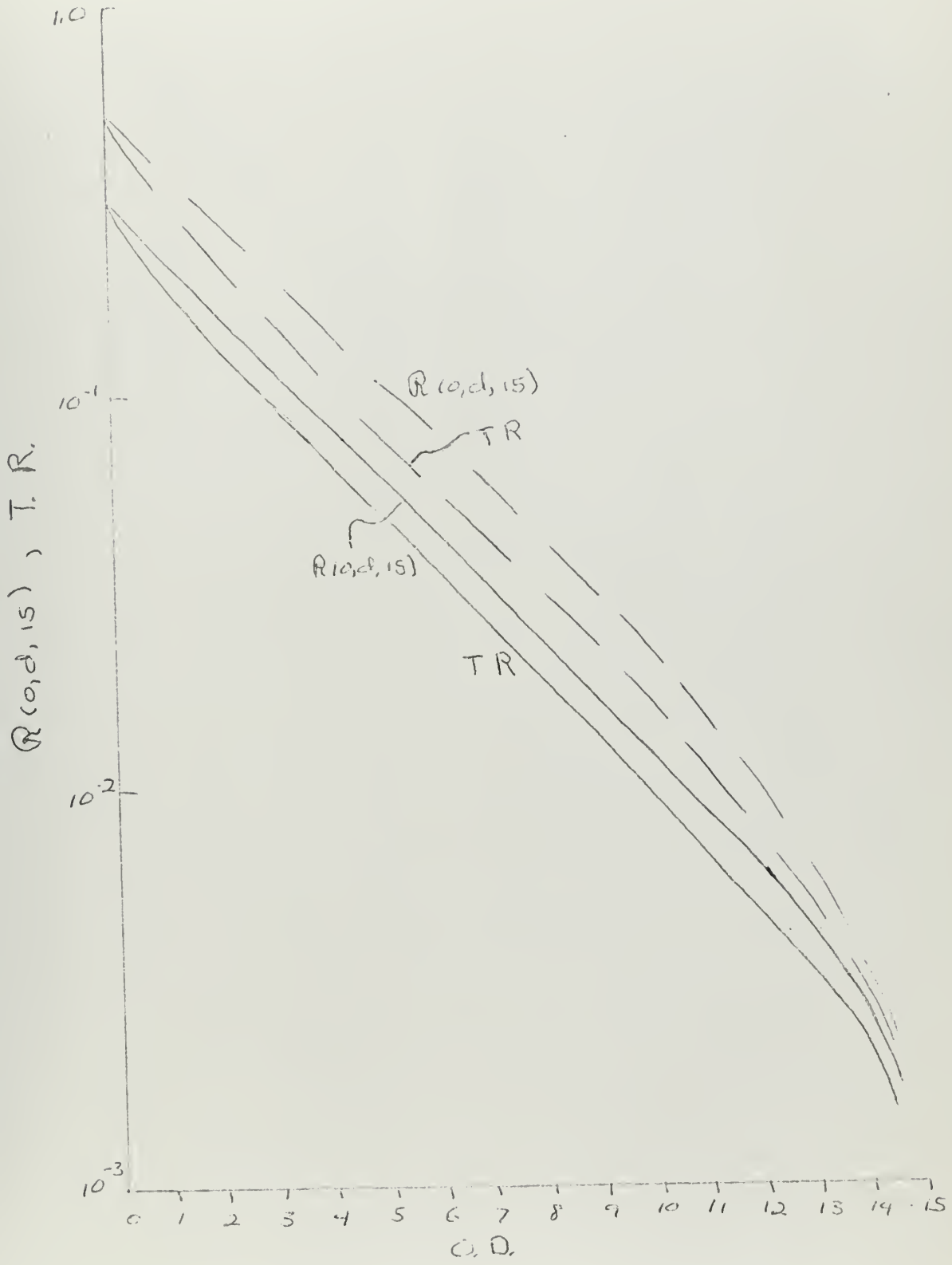
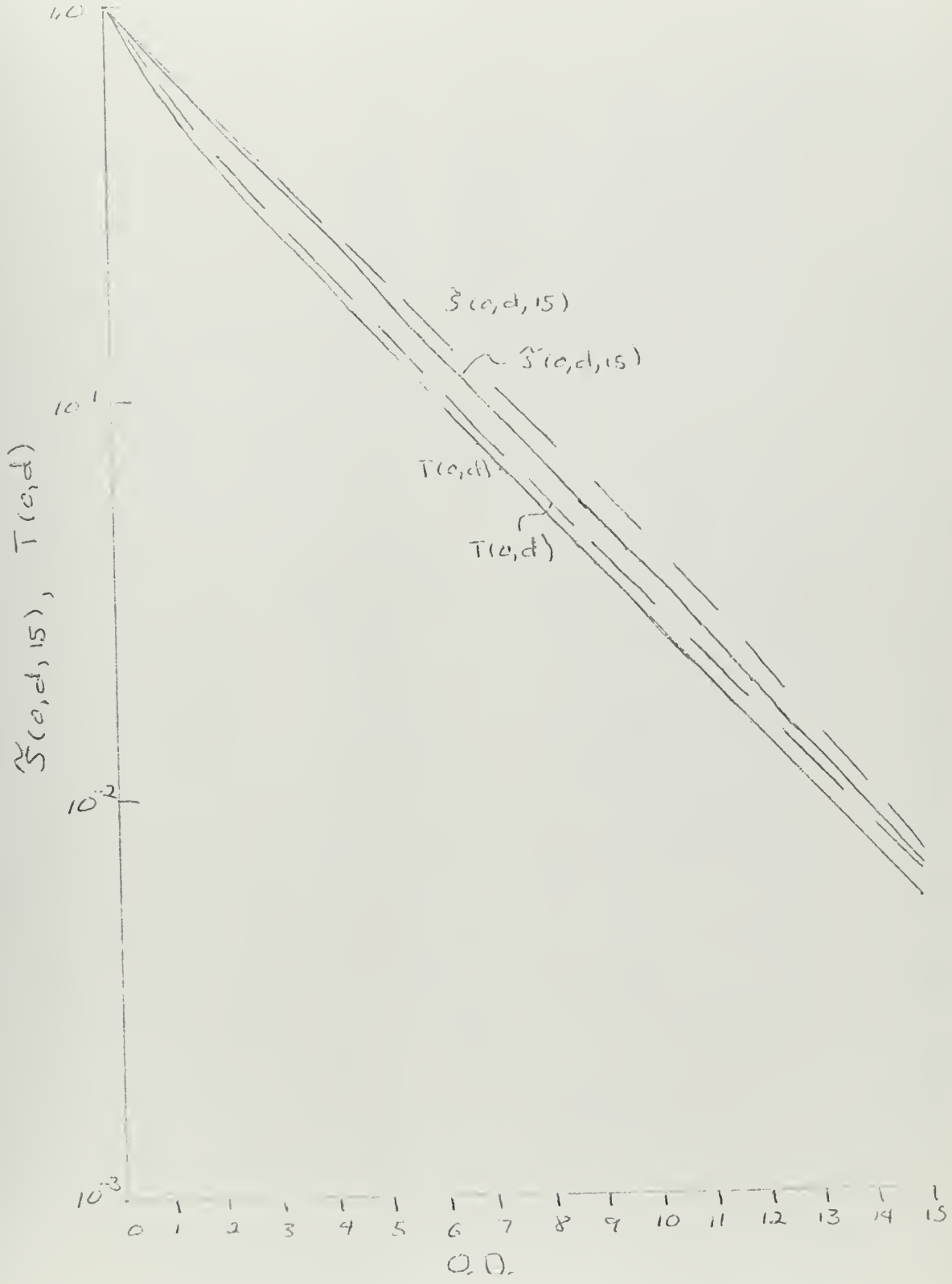


Figure 9-D. Complete Transmittance and Truncated Transmittance



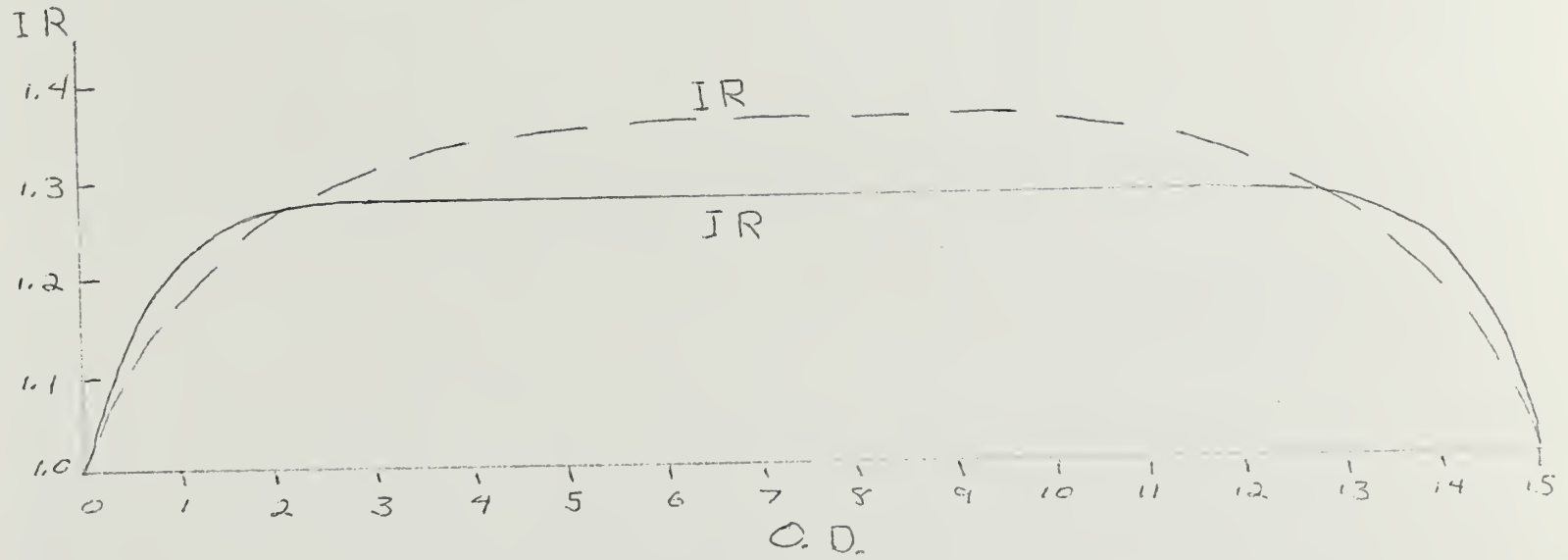


Figure 9-E. Interreflectance for Hypothetical Case 1

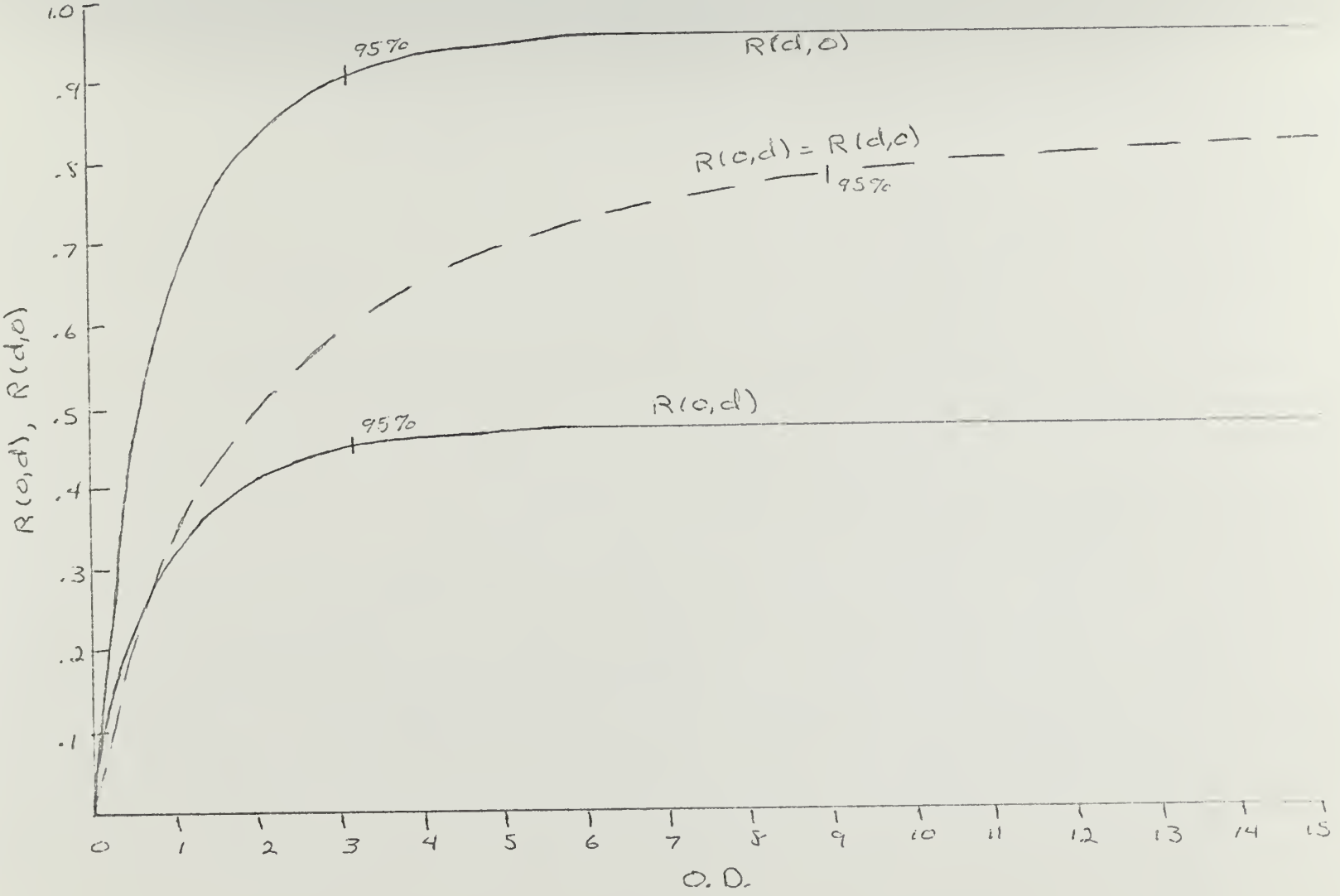


Figure 10-A. Reflectances for Hypothetical Case 2

Figure 10-B. Transmittances for Hypothetical Case 2

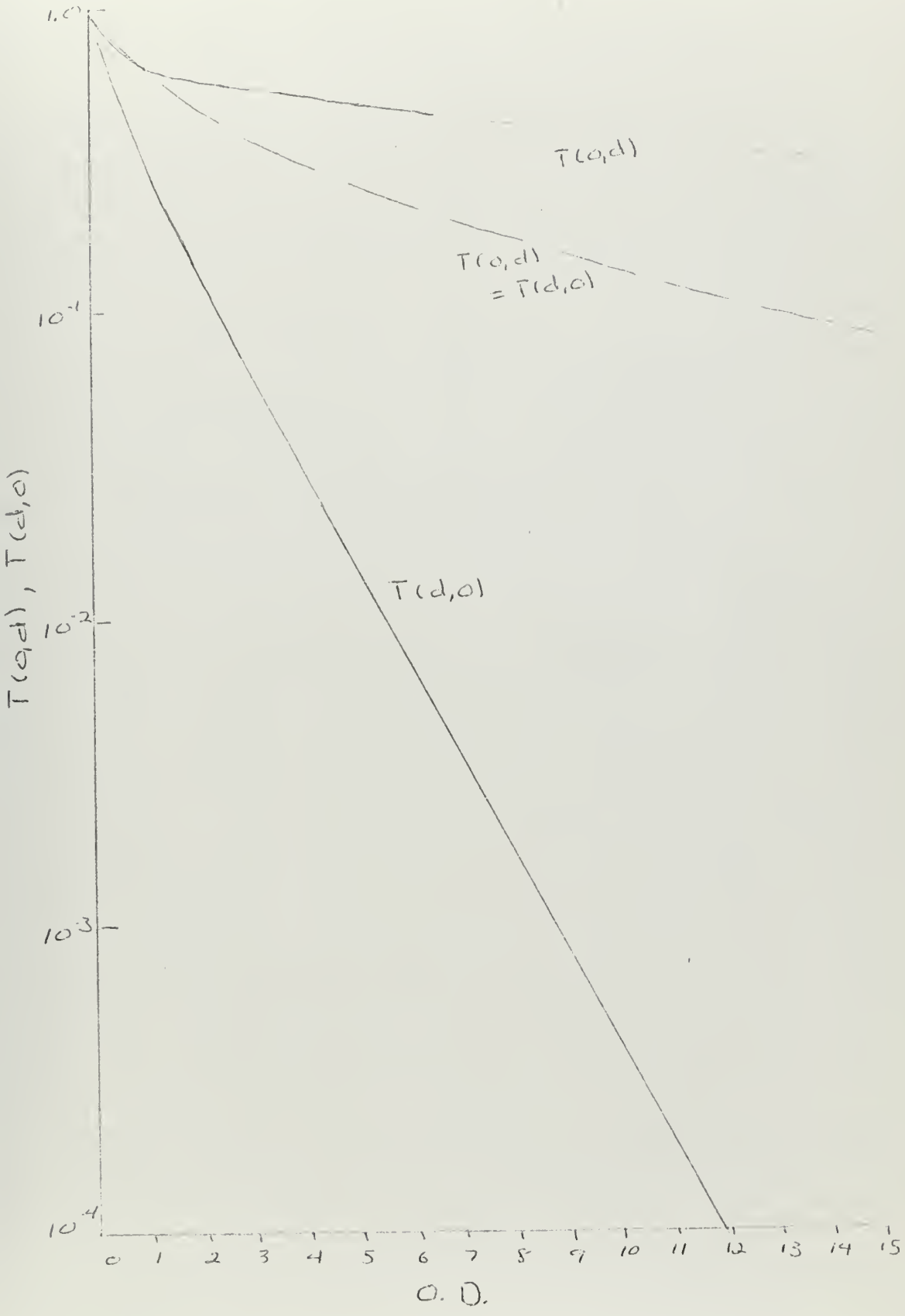
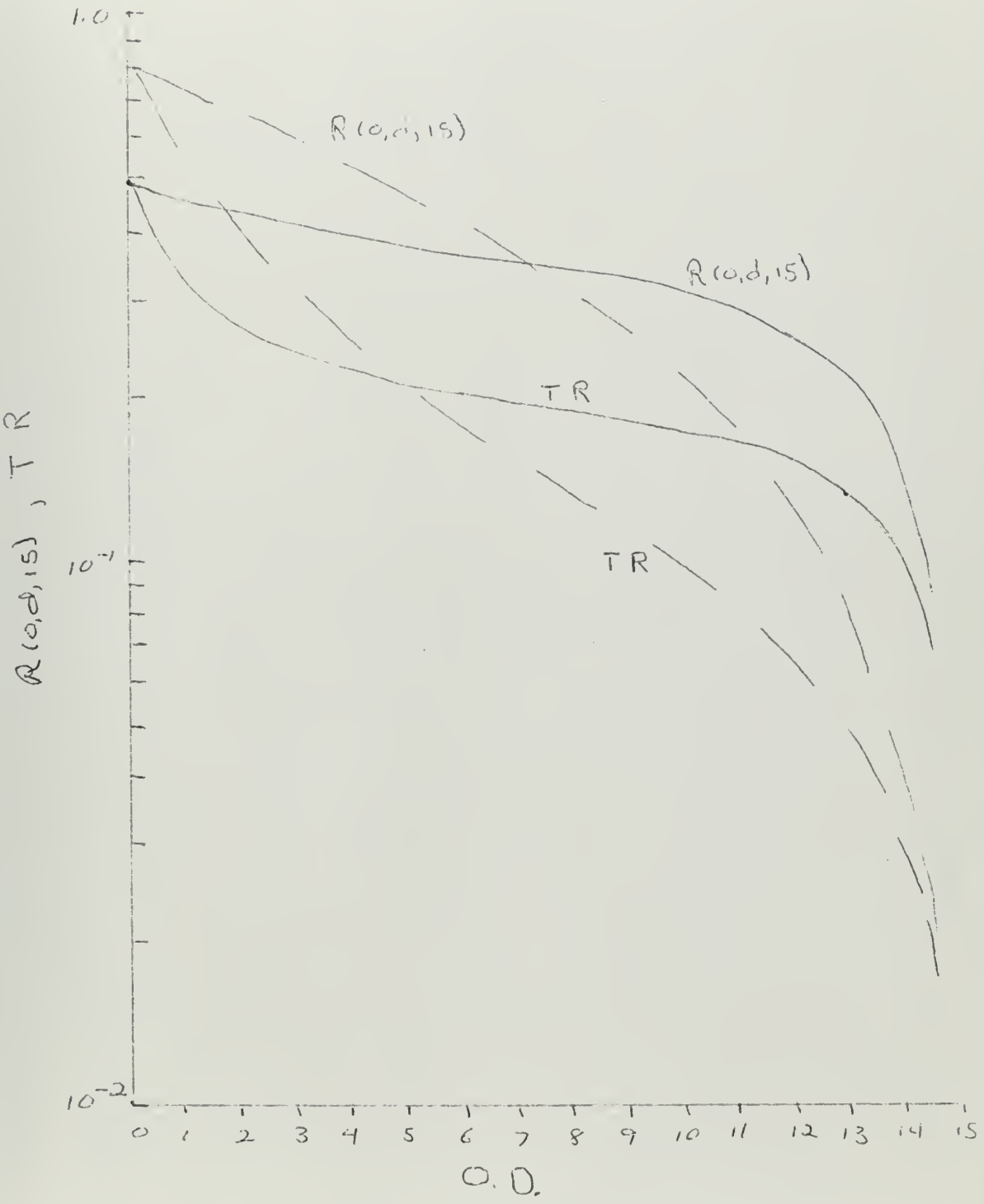


Figure 10-C. Complete Reflectance and Truncated Reflectance



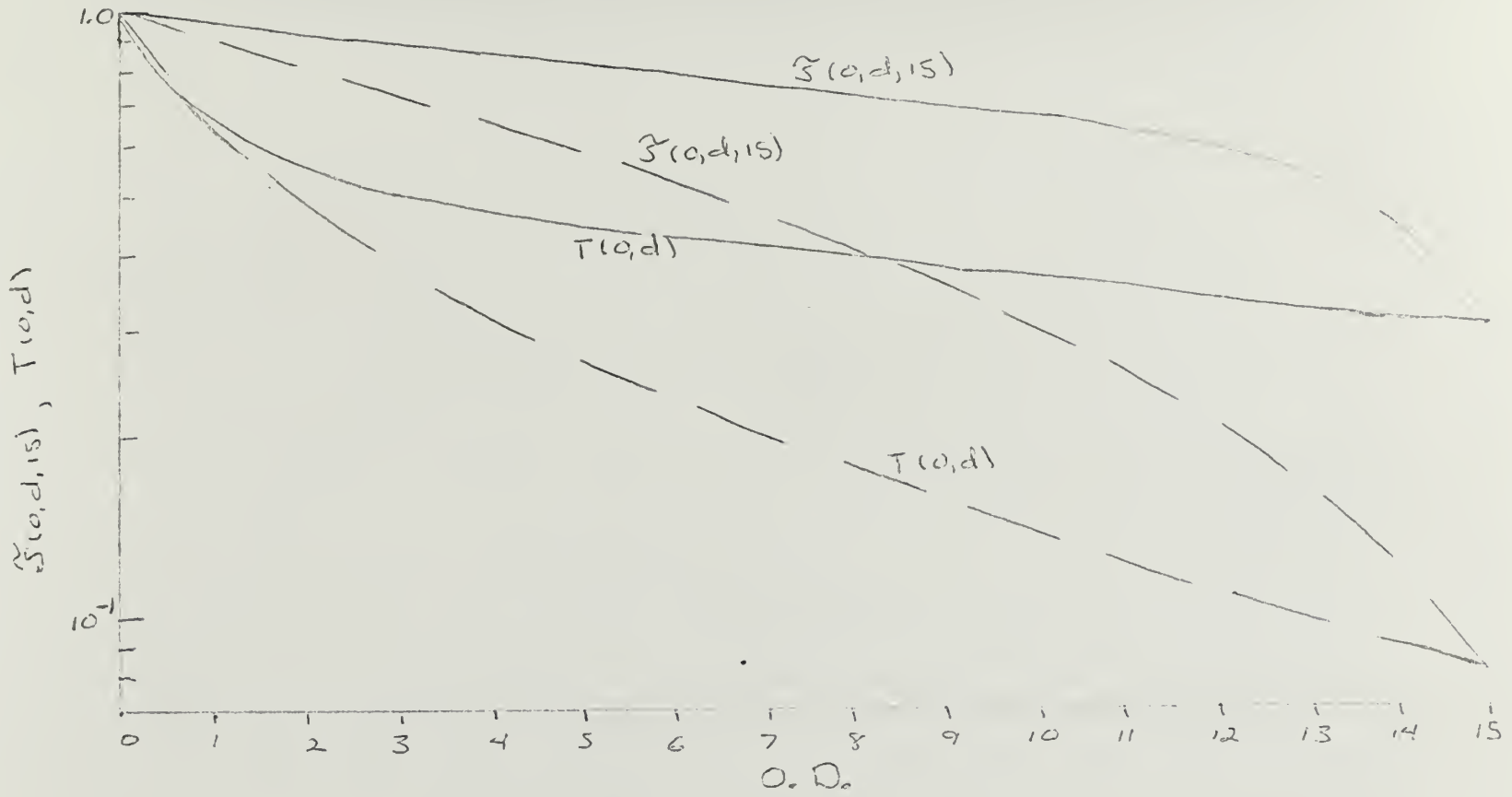


Figure 10-D. Complete Transmittance and Truncated Transmittance

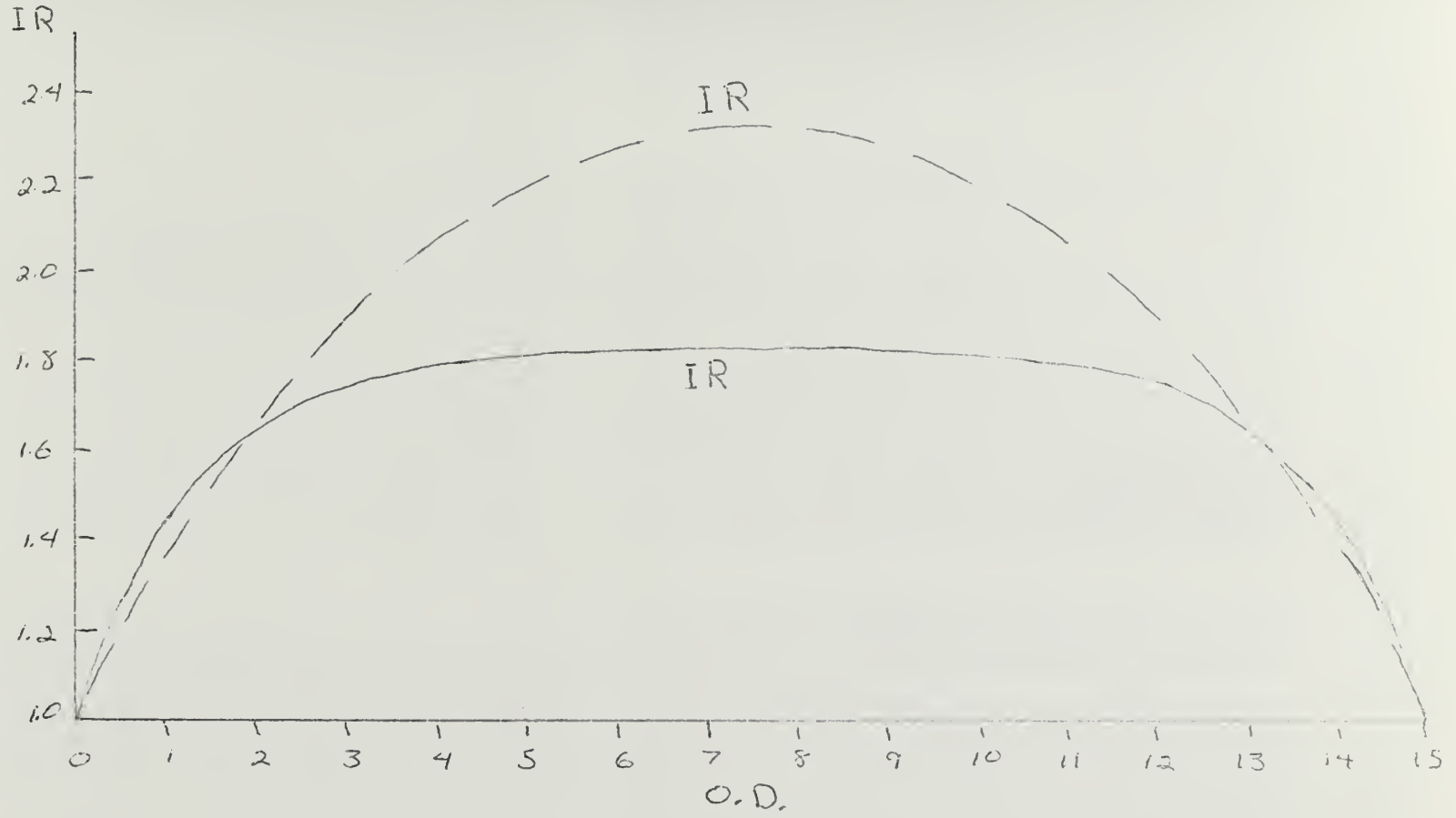


Figure 10-E. Interreflectance for Hypothetical Case 2

TABLE 1-A DISTILLED WATER A

A=0.053600 B=0.000820 D(+)=2.670000 D(-)=1.330000
A(+)=0.143112 A(-)=0.071288 B(+)=0.002189 B(-)=0.001091
S=0.00845000 ALPHA=0.06200000 RHO=0.13629032

Do= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
Do= 8.06	R(0.0, 0.5)= 0.00414432	T(0.0, 0.5)= 0.55785757
Do= 16.13	R(0.0, 1.0)= 0.00486066	T(0.0, 1.0)= 0.31121579
Do= 24.19	R(0.0, 1.5)= 0.00498448	T(0.0, 1.5)= 0.17362111
Do= 32.26	R(0.0, 2.0)= 0.00500589	T(0.0, 2.0)= 0.09685986
Do= 40.32	R(0.0, 2.5)= 0.00500959	T(0.0, 2.5)= 0.05403626
Do= 48.39	R(0.0, 3.0)= 0.00501023	T(0.0, 3.0)= 0.03014579
Do= 56.45	R(0.0, 3.5)= 0.00501034	T(0.0, 3.5)= 0.01681776
Do= 64.52	R(0.0, 4.0)= 0.00501036	T(0.0, 4.0)= 0.00938231
Do= 72.58	R(0.0, 4.5)= 0.00501036	T(0.0, 4.5)= 0.00523421
Do= 80.65	R(0.0, 5.0)= 0.00501036	T(0.0, 5.0)= 0.00292006
Do= 88.71	R(0.0, 5.5)= 0.00501036	T(0.0, 5.5)= 0.00162905
Do= 96.77	R(0.0, 6.0)= 0.00501036	T(0.0, 6.0)= 0.00090881
Do=104.84	R(0.0, 6.5)= 0.00501036	T(0.0, 6.5)= 0.00050701
Do=112.90	R(0.0, 7.0)= 0.00501036	T(0.0, 7.0)= 0.00028285
Do=120.97	R(0.0, 7.5)= 0.00501036	T(0.0, 7.5)= 0.00015780
Do=129.03	R(0.0, 8.0)= 0.00501036	T(0.0, 8.0)= 0.00008803
Do=137.10	R(0.0, 8.5)= 0.00501036	T(0.0, 8.5)= 0.00004911
Do=145.16	R(0.0, 9.0)= 0.00501036	T(0.0, 9.0)= 0.00002740
Do=153.23	R(0.0, 9.5)= 0.00501036	T(0.0, 9.5)= 0.00001528
Do=161.29	R(0.0,10.0)= 0.00501036	T(0.0,10.0)= 0.00000853
Do=169.35	R(0.0,10.5)= 0.00501036	T(0.0,10.5)= 0.00000476
Do=177.42	R(0.0,11.0)= 0.00501036	T(0.0,11.0)= 0.00000265
Do=185.48	R(0.0,11.5)= 0.00501036	T(0.0,11.5)= 0.00000148
Do=193.55	R(0.0,12.0)= 0.00501036	T(0.0,12.0)= 0.00000083
Do=201.61	R(0.0,12.5)= 0.00501036	T(0.0,12.5)= 0.00000046
Do=209.68	R(0.0,13.0)= 0.00501036	T(0.0,13.0)= 0.00000026
Do=217.74	R(0.0,13.5)= 0.00501036	T(0.0,13.5)= 0.00000014
Do=225.81	R(0.0,14.0)= 0.00501036	T(0.0,14.0)= 0.00000008
Do=233.87	R(0.0,14.5)= 0.00501036	T(0.0,14.5)= 0.00000004
Do=241.94	R(0.0,15.0)= 0.00501036	T(0.0,15.0)= 0.00000002

Do= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
Do= 8.06	R(0.5,0.0)= 0.00831983	T(0.5,0.0)= 0.30982777
Do= 16.13	R(1.0,0.0)= 0.00975787	T(1.0,0.0)= 0.09599656
Do= 24.19	R(1.5,0.0)= 0.01000644	T(1.5,0.0)= 0.02974360
Do= 32.26	R(2.0,0.0)= 0.01004941	T(2.0,0.0)= 0.00921578
Do= 40.32	R(2.5,0.0)= 0.01005684	T(2.5,0.0)= 0.00285542
Do= 48.39	R(3.0,0.0)= 0.01005812	T(3.0,0.0)= 0.00088473
Do= 56.45	R(3.5,0.0)= 0.01005834	T(3.5,0.0)= 0.00027412
Do= 64.52	R(4.0,0.0)= 0.01005838	T(4.0,0.0)= 0.00008493
Do= 72.58	R(4.5,0.0)= 0.01005839	T(4.5,0.0)= 0.00002632
Do= 80.65	R(5.0,0.0)= 0.01005839	T(5.0,0.0)= 0.00000815
Do= 88.71	R(5.5,0.0)= 0.01005839	T(5.5,0.0)= 0.00000253
Do= 96.77	R(6.0,0.0)= 0.01005839	T(6.0,0.0)= 0.00000078
Do=104.84	R(6.5,0.0)= 0.01005839	T(6.5,0.0)= 0.00000024
Do=112.90	R(7.0,0.0)= 0.01005839	T(7.0,0.0)= 0.00000008
Do=120.97	R(7.5,0.0)= 0.01005839	T(7.5,0.0)= 0.00000002
Do=129.03	R(8.0,0.0)= 0.01005839	T(8.0,0.0)= 0.00000001
Do=137.10	R(8.5,0.0)= 0.01005839	T(8.5,0.0)= 0.00000000
Do=145.16	R(9.0,0.0)= 0.01005839	T(9.0,0.0)= 0.00000000
Do=153.23	R(9.5,0.0)= 0.01005839	T(9.5,0.0)= 0.00000000
Do=161.29	R(10.0,0.0)= 0.01005839	T(10.0,0.0)= 0.00000000
Do=169.35	R(10.5,0.0)= 0.01005839	T(10.5,0.0)= 0.00000000
Do=177.42	R(11.0,0.0)= 0.01005839	T(11.0,0.0)= 0.00000000
Do=185.48	R(11.5,0.0)= 0.01005839	T(11.5,0.0)= 0.00000000
Do=193.55	R(12.0,0.0)= 0.01005839	T(12.0,0.0)= 0.00000000
Do=201.61	R(12.5,0.0)= 0.01005839	T(12.5,0.0)= 0.00000000
Do=209.68	R(13.0,0.0)= 0.01005839	T(13.0,0.0)= 0.00000000
Do=217.74	R(13.5,0.0)= 0.01005839	T(13.5,0.0)= 0.00000000
Do=225.81	R(14.0,0.0)= 0.01005839	T(14.0,0.0)= 0.00000000
Do=233.87	R(14.5,0.0)= 0.01005839	T(14.5,0.0)= 0.00000000
Do=241.94	R(15.0,0.0)= 0.01005839	T(15.0,0.0)= 0.00000000

TABLE 1-A (CONTINUED)

R(0.0, 0.0,15.0)= 0.00501036	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.00279518	T(0.0, 0.5,15.0)= 0.55788082
R(0.0, 1.0,15.0)= 0.00155938	T(0.0, 1.0,15.0)= 0.31123101
R(0.0, 1.5,15.0)= 0.00086995	T(0.0, 1.5,15.0)= 0.17362981
R(0.0, 2.0,15.0)= 0.00048533	T(0.0, 2.0,15.0)= 0.09686474
R(0.0, 2.5,15.0)= 0.00027075	T(0.0, 2.5,15.0)= 0.05403898
R(0.0, 3.0,15.0)= 0.00015105	T(0.0, 3.0,15.0)= 0.03014731
R(0.0, 3.5,15.0)= 0.00008427	T(0.0, 3.5,15.0)= 0.01681861
R(0.0, 4.0,15.0)= 0.00004701	T(0.0, 4.0,15.0)= 0.00938278
R(0.0, 4.5,15.0)= 0.00002623	T(0.0, 4.5,15.0)= 0.00523447
R(0.0, 5.0,15.0)= 0.00001463	T(0.0, 5.0,15.0)= 0.00292021
R(0.0, 5.5,15.0)= 0.00000816	T(0.0, 5.5,15.0)= 0.00162913
R(0.0, 6.0,15.0)= 0.00000455	T(0.0, 6.0,15.0)= 0.00090886
R(0.0, 6.5,15.0)= 0.00000254	T(0.0, 6.5,15.0)= 0.00050704
R(0.0, 7.0,15.0)= 0.00000142	T(0.0, 7.0,15.0)= 0.00028287
R(0.0, 7.5,15.0)= 0.00000079	T(0.0, 7.5,15.0)= 0.00015781
R(0.0, 8.0,15.0)= 0.00000044	T(0.0, 8.0,15.0)= 0.00008804
R(0.0, 8.5,15.0)= 0.00000025	T(0.0, 8.5,15.0)= 0.00004911
R(0.0, 9.0,15.0)= 0.00000014	T(0.0, 9.0,15.0)= 0.00002740
R(0.0, 9.5,15.0)= 0.00000008	T(0.0, 9.5,15.0)= 0.00001529
R(0.0,10.0,15.0)= 0.00000004	T(0.0,10.0,15.0)= 0.00000853
R(0.0,10.5,15.0)= 0.00000002	T(0.0,10.5,15.0)= 0.00000476
R(0.0,11.0,15.0)= 0.00000001	T(0.0,11.0,15.0)= 0.00000265
R(0.0,11.5,15.0)= 0.00000001	T(0.0,11.5,15.0)= 0.00000148
R(0.0,12.0,15.0)= 0.00000000	T(0.0,12.0,15.0)= 0.00000083
R(0.0,12.5,15.0)= 0.00000000	T(0.0,12.5,15.0)= 0.00000046
R(0.0,13.0,15.0)= 0.00000000	T(0.0,13.0,15.0)= 0.00000026
R(0.0,13.5,15.0)= 0.00000000	T(0.0,13.5,15.0)= 0.00000014
R(0.0,14.0,15.0)= 0.00000000	T(0.0,14.0,15.0)= 0.00000008
R(0.0,14.5,15.0)= 0.00000000	T(0.0,14.5,15.0)= 0.00000004
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00000002

0.0D0= 0.0	TR= 0.005010359069	IR= 1.000000000000
0.0D0= 0.50	TR= 0.002795066712	IR= 1.000041687062
0.0D0= 1.00	TR= 0.001559302877	IR= 1.000048892845
0.0D0= 1.50	TR= 0.000869904085	IR= 1.000050138395
0.0D0= 2.00	TR= 0.000485302701	IR= 1.000050353693
0.0D0= 2.50	TR= 0.000270741059	IR= 1.000050390908
0.0D0= 3.00	TR= 0.000151041243	IR= 1.000050397341
0.0D0= 3.50	TR= 0.000084263013	IR= 1.000050398453
0.0D0= 4.00	TR= 0.000047008719	IR= 1.000050398645
0.0D0= 4.50	TR= 0.000026225263	IR= 1.000050398679
0.0D0= 5.00	TR= 0.000014630571	IR= 1.000050398684
0.0D0= 5.50	TR= 0.000008162115	IR= 1.000050398685
0.0D0= 6.00	TR= 0.000004553487	IR= 1.000050398685
0.0D0= 6.50	TR= 0.000002540303	IR= 1.000050398685
0.0D0= 7.00	TR= 0.000001417186	IR= 1.000050398685
0.0D0= 7.50	TR= 0.000000790621	IR= 1.000050398685
0.0D0= 8.00	TR= 0.000000441072	IR= 1.000050398685
0.0D0= 8.50	TR= 0.000000246066	IR= 1.000050398685
0.0D0= 9.00	TR= 0.000000137275	IR= 1.000050398685
0.0D0= 9.50	TR= 0.000000076583	IR= 1.000050398685
0.0D0=10.00	TR= 0.000000042724	IR= 1.000050398684
0.0D0=10.50	TR= 0.000000023835	IR= 1.000050398679
0.0D0=11.00	TR= 0.000000013297	IR= 1.000050398645
0.0D0=11.50	TR= 0.000000007418	IR= 1.000050398453
0.0D0=12.00	TR= 0.000000004138	IR= 1.000050397341
0.0D0=12.50	TR= 0.000000002308	IR= 1.000050390908
0.0D0=13.00	TR= 0.000000001287	IR= 1.000050353693
0.0D0=13.50	TR= 0.000000000715	IR= 1.000050138395
0.0D0=14.00	TR= 0.000000000389	IR= 1.000048892845
0.0D0=14.50	TR= 0.000000000185	IR= 1.000041687062
0.0D0=15.00	TR= 0.0	IR= 1.000000000000

TABLE 1-B DISTILLED WATER A

A=0.053600 B=0.000820 D(+)=1.000000 D(-)=1.000000
A(+)=0.053600 A(-)=0.053600 B(+)=0.000820 B(-)=0.000820
S=0.00845000 ALPHA=0.06200000 RHO=0.13629032

Do= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
Do= 8.06	R(0.0, 0.5)= 0.00440200	T(0.0, 0.5)= 0.64477471
Do= 16.13	R(0.0, 1.0)= 0.00623210	T(0.0, 1.0)= 0.41574248
Do= 24.19	R(0.0, 1.5)= 0.00699297	T(0.0, 1.5)= 0.26806759
Do= 32.26	R(0.0, 2.0)= 0.00730931	T(0.0, 2.0)= 0.17284852
Do= 40.32	R(0.0, 2.5)= 0.00744083	T(0.0, 2.5)= 0.11145194
Do= 48.39	R(0.0, 3.0)= 0.00749551	T(0.0, 3.0)= 0.07186375
Do= 56.45	R(0.0, 3.5)= 0.00751824	T(0.0, 3.5)= 0.04633746
Do= 64.52	R(0.0, 4.0)= 0.00752770	T(0.0, 4.0)= 0.02987821
Do= 72.58	R(0.0, 4.5)= 0.00753163	T(0.0, 4.5)= 0.01926535
Do= 80.65	R(0.0, 5.0)= 0.00753326	T(0.0, 5.0)= 0.01242222
Do= 88.71	R(0.0, 5.5)= 0.00753394	T(0.0, 5.5)= 0.00800980
Do= 96.77	R(0.0, 6.0)= 0.00753422	T(0.0, 6.0)= 0.00516469
Do=104.84	R(0.0, 6.5)= 0.00753434	T(0.0, 6.5)= 0.00333017
Do=112.90	R(0.0, 7.0)= 0.00753439	T(0.0, 7.0)= 0.00214728
Do=120.97	R(0.0, 7.5)= 0.00753441	T(0.0, 7.5)= 0.00138456
Do=129.03	R(0.0, 8.0)= 0.00753442	T(0.0, 8.0)= 0.00089276
Do=137.10	R(0.0, 8.5)= 0.00753442	T(0.0, 8.5)= 0.00057565
Do=145.16	R(0.0, 9.0)= 0.00753442	T(0.0, 9.0)= 0.00037117
Do=153.23	R(0.0, 9.5)= 0.00753442	T(0.0, 9.5)= 0.00023933
Do=161.29	R(0.0,10.0)= 0.00753442	T(0.0,10.0)= 0.00015432
Do=169.35	R(0.0,10.5)= 0.00753442	T(0.0,10.5)= 0.00009951
Do=177.42	R(0.0,11.0)= 0.00753442	T(0.0,11.0)= 0.00006416
Do=185.48	R(0.0,11.5)= 0.00753442	T(0.0,11.5)= 0.00004137
Do=193.55	R(0.0,12.0)= 0.00753442	T(0.0,12.0)= 0.00002668
Do=201.61	R(0.0,12.5)= 0.00753442	T(0.0,12.5)= 0.00001720
Do=209.68	R(0.0,13.0)= 0.00753442	T(0.0,13.0)= 0.00001109
Do=217.74	R(0.0,13.5)= 0.00753442	T(0.0,13.5)= 0.00000715
Do=225.81	R(0.0,14.0)= 0.00753442	T(0.0,14.0)= 0.00000461
Do=233.87	R(0.0,14.5)= 0.00753442	T(0.0,14.5)= 0.00000297
Do=241.94	R(0.0,15.0)= 0.00753442	T(0.0,15.0)= 0.00000192

Do= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
Do= 8.06	R(0.5,0.0)= 0.00440200	T(0.5,0.0)= 0.64477471
Do= 16.13	R(1.0,0.0)= 0.00623210	T(1.0,0.0)= 0.41574248
Do= 24.19	R(1.5,0.0)= 0.00699297	T(1.5,0.0)= 0.26806759
Do= 32.26	R(2.0,0.0)= 0.00730931	T(2.0,0.0)= 0.17284852
Do= 40.32	R(2.5,0.0)= 0.00744083	T(2.5,0.0)= 0.11145194
Do= 48.39	R(3.0,0.0)= 0.00749551	T(3.0,0.0)= 0.07186375
Do= 56.45	R(3.5,0.0)= 0.00751824	T(3.5,0.0)= 0.04633746
Do= 64.52	R(4.0,0.0)= 0.00752770	T(4.0,0.0)= 0.02987821
Do= 72.58	R(4.5,0.0)= 0.00753163	T(4.5,0.0)= 0.01926535
Do= 80.65	R(5.0,0.0)= 0.00753326	T(5.0,0.0)= 0.01242222
Do= 88.71	R(5.5,0.0)= 0.00753394	T(5.5,0.0)= 0.00800980
Do= 96.77	R(6.0,0.0)= 0.00753422	T(6.0,0.0)= 0.00516469
Do=104.84	R(6.5,0.0)= 0.00753434	T(6.5,0.0)= 0.00333017
Do=112.90	R(7.0,0.0)= 0.00753439	T(7.0,0.0)= 0.00214728
Do=120.97	R(7.5,0.0)= 0.00753441	T(7.5,0.0)= 0.00138456
Do=129.03	R(8.0,0.0)= 0.00753442	T(8.0,0.0)= 0.00089276
Do=137.10	R(8.5,0.0)= 0.00753442	T(8.5,0.0)= 0.00057565
Do=145.16	R(9.0,0.0)= 0.00753442	T(9.0,0.0)= 0.00037117
Do=153.23	R(9.5,0.0)= 0.00753442	T(9.5,0.0)= 0.00023933
Do=161.29	R(10.0,0.0)= 0.00753442	T(10.0,0.0)= 0.00015432
Do=169.35	R(10.5,0.0)= 0.00753442	T(10.5,0.0)= 0.00009951
Do=177.42	R(11.0,0.0)= 0.00753442	T(11.0,0.0)= 0.00006416
Do=185.48	R(11.5,0.0)= 0.00753442	T(11.5,0.0)= 0.00004137
Do=193.55	R(12.0,0.0)= 0.00753442	T(12.0,0.0)= 0.00002668
Do=201.61	R(12.5,0.0)= 0.00753442	T(12.5,0.0)= 0.00001720
Do=209.68	R(13.0,0.0)= 0.00753442	T(13.0,0.0)= 0.00001109
Do=217.74	R(13.5,0.0)= 0.00753442	T(13.5,0.0)= 0.00000715
Do=225.81	R(14.0,0.0)= 0.00753442	T(14.0,0.0)= 0.00000461
Do=233.87	R(14.5,0.0)= 0.00753442	T(14.5,0.0)= 0.00000297
Do=241.94	R(15.0,0.0)= 0.00753442	T(15.0,0.0)= 0.00000192

TABLE 1-B (CONTINUED)

R(0.0, 0.0,15.0)= 0.00753442	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.00485817	T(0.0, 0.5,15.0)= 0.64479610
R(0.0, 1.0,15.0)= 0.00313253	T(0.0, 1.0,15.0)= 0.41576200
R(0.0, 1.5,15.0)= 0.00201984	T(0.0, 1.5,15.0)= 0.26808172
R(0.0, 2.0,15.0)= 0.00130239	T(0.0, 2.0,15.0)= 0.17285804
R(0.0, 2.5,15.0)= 0.00083977	T(0.0, 2.5,15.0)= 0.11145819
R(0.0, 3.0,15.0)= 0.00054148	T(0.0, 3.0,15.0)= 0.07186781
R(0.0, 3.5,15.0)= 0.00034915	T(0.0, 3.5,15.0)= 0.04634008
R(0.0, 4.0,15.0)= 0.00022513	T(0.0, 4.0,15.0)= 0.02987990
R(0.0, 4.5,15.0)= 0.00014516	T(0.0, 4.5,15.0)= 0.01926645
R(0.0, 5.0,15.0)= 0.00009360	T(0.0, 5.0,15.0)= 0.01242293
R(0.0, 5.5,15.0)= 0.00006035	T(0.0, 5.5,15.0)= 0.00801026
R(0.0, 6.0,15.0)= 0.00003892	T(0.0, 6.0,15.0)= 0.00516498
R(0.0, 6.5,15.0)= 0.00002509	T(0.0, 6.5,15.0)= 0.00333036
R(0.0, 7.0,15.0)= 0.00001618	T(0.0, 7.0,15.0)= 0.00214740
R(0.0, 7.5,15.0)= 0.00001043	T(0.0, 7.5,15.0)= 0.00138464
R(0.0, 8.0,15.0)= 0.00000673	T(0.0, 8.0,15.0)= 0.00089281
R(0.0, 8.5,15.0)= 0.00000434	T(0.0, 8.5,15.0)= 0.00057568
R(0.0, 9.0,15.0)= 0.00000280	T(0.0, 9.0,15.0)= 0.00037120
R(0.0, 9.5,15.0)= 0.00000180	T(0.0, 9.5,15.0)= 0.00023935
R(0.0,10.0,15.0)= 0.00000116	T(0.0,10.0,15.0)= 0.00015433
R(0.0,10.5,15.0)= 0.00000075	T(0.0,10.5,15.0)= 0.00009951
R(0.0,11.0,15.0)= 0.00000048	T(0.0,11.0,15.0)= 0.00006416
R(0.0,11.5,15.0)= 0.00000031	T(0.0,11.5,15.0)= 0.00004137
R(0.0,12.0,15.0)= 0.00000020	T(0.0,12.0,15.0)= 0.00002668
R(0.0,12.5,15.0)= 0.00000013	T(0.0,12.5,15.0)= 0.00001720
R(0.0,13.0,15.0)= 0.00000008	T(0.0,13.0,15.0)= 0.00001109
R(0.0,13.5,15.0)= 0.00000005	T(0.0,13.5,15.0)= 0.00000715
R(0.0,14.0,15.0)= 0.00000003	T(0.0,14.0,15.0)= 0.00000461
R(0.0,14.5,15.0)= 0.00000001	T(0.0,14.5,15.0)= 0.00000297
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00000192

0.D0= 0.0	TR= 0.007534422541	IR= 1.000000000000
0.D0= 0.50	TR= 0.004858005107	IR= 1.000033167627
0.D0= 1.00	TR= 0.003132379531	IR= 1.000046957466
0.D0= 1.50	TR= 0.002019734512	IR= 1.000052690757
0.D0= 2.00	TR= 0.001302313823	IR= 1.000055074441
0.D0= 2.50	TR= 0.000839726035	IR= 1.000056065487
0.D0= 3.00	TR= 0.000541451846	IR= 1.000056477526
0.D0= 3.50	TR= 0.000349125976	IR= 1.000056648836
0.D0= 4.00	TR= 0.000225115049	IR= 1.000056720060
0.D0= 4.50	TR= 0.000145153300	IR= 1.000056749672
0.D0= 5.00	TR= 0.000093594278	IR= 1.000056761983
0.D0= 5.50	TR= 0.000060349223	IR= 1.000056767100
0.D0= 6.00	TR= 0.000038912940	IR= 1.000056769223
0.D0= 6.50	TR= 0.000025090907	IR= 1.000056770097
0.D0= 7.00	TR= 0.000016178511	IR= 1.000056770439
0.D0= 7.50	TR= 0.000010431829	IR= 1.000056770528
0.D0= 8.00	TR= 0.000006726385	IR= 1.000056770439
0.D0= 8.50	TR= 0.000004337118	IR= 1.000056770097
0.D0= 9.00	TR= 0.000002796513	IR= 1.000056769223
0.D0= 9.50	TR= 0.000001803113	IR= 1.000056767100
0.D0=10.00	TR= 0.000001162536	IR= 1.000056761983
0.D0=10.50	TR= 0.000000749436	IR= 1.000056749672
0.D0=11.00	TR= 0.000000482981	IR= 1.000056720060
0.D0=11.50	TR= 0.000000311033	IR= 1.000056648836
0.D0=12.00	TR= 0.000000199947	IR= 1.000056477526
0.D0=12.50	TR= 0.000000127984	IR= 1.000056065487
0.D0=13.00	TR= 0.000000081065	IR= 1.000055074441
0.D0=13.50	TR= 0.000000050008	IR= 1.000052690757
0.D0=14.00	TR= 0.000000028737	IR= 1.000046957466
0.D0=14.50	TR= 0.000000013088	IR= 1.000033167627
0.D0=15.00	TR= 0.0	IR= 1.000000000000

TABLE 2-A DISTILLED WATER B

A=0.042400 B=C.000620 D(+)=2.670000 D(-)=1.330000
A(+)=0.113208 A(-)=0.056392 B(+)=0.001655 B(-)=0.000825
S=0.00457000 ALPHA=0.04700000 RHO=0.09723404

Do= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
Do= 10.64	R(0.0, 0.5)= 0.00402384	T(0.0, 0.5)= 0.54408948
Do= 21.28	R(0.0, 1.0)= 0.00466898	T(0.0, 1.0)= 0.29604299
Do= 31.91	R(0.0, 1.5)= 0.00477243	T(0.0, 1.5)= 0.16107995
Do= 42.55	R(0.0, 2.0)= 0.00478901	T(0.0, 2.0)= 0.08764529
Do= 53.19	R(0.0, 2.5)= 0.00479167	T(0.0, 2.5)= 0.04768872
Do= 63.83	R(0.0, 3.0)= 0.00479210	T(0.0, 3.0)= 0.02594794
Do= 74.47	R(0.0, 3.5)= 0.00479217	T(0.0, 3.5)= 0.01411855
Do= 85.11	R(0.0, 4.0)= 0.00479218	T(0.0, 4.0)= 0.00768205
Do= 95.74	R(0.0, 4.5)= 0.00479218	T(0.0, 4.5)= 0.00417988
Do=106.38	R(0.0, 5.0)= 0.00479218	T(0.0, 5.0)= 0.00227432
Do=117.02	R(0.0, 5.5)= 0.00479218	T(0.0, 5.5)= 0.00123748
Do=127.66	R(0.0, 6.0)= 0.00479218	T(0.0, 6.0)= 0.00067333
Do=138.30	R(0.0, 6.5)= 0.00479218	T(0.0, 6.5)= 0.00036636
Do=148.94	R(0.0, 7.0)= 0.00479218	T(0.0, 7.0)= 0.00019934
Do=159.57	R(0.0, 7.5)= 0.00479218	T(0.0, 7.5)= 0.00010846
Do=170.21	R(0.0, 8.0)= 0.00479218	T(0.0, 8.0)= 0.00005902
Do=180.85	R(0.0, 8.5)= 0.00479218	T(0.0, 8.5)= 0.00003211
Do=191.49	R(0.0, 9.0)= 0.00479218	T(0.0, 9.0)= 0.00001747
Do=202.13	R(0.0, 9.5)= 0.00479218	T(0.0, 9.5)= 0.00000951
Do=212.77	R(0.0,10.0)= 0.00479218	T(0.0,10.0)= 0.00000517
Do=223.40	R(0.0,10.5)= 0.00479218	T(0.0,10.5)= 0.00000281
Do=234.04	R(0.0,11.0)= 0.00479218	T(0.0,11.0)= 0.00000153
Do=244.68	R(0.0,11.5)= 0.00479218	T(0.0,11.5)= 0.00000083
Do=255.32	R(0.0,12.0)= 0.00479218	T(0.0,12.0)= 0.00000045
Do=265.96	R(0.0,12.5)= 0.00479218	T(0.0,12.5)= 0.00000025
Do=276.60	R(0.0,13.0)= 0.00479218	T(0.0,13.0)= 0.00000013
Do=287.23	R(0.0,13.5)= 0.00479218	T(0.0,13.5)= 0.00000007
Do=297.87	R(0.0,14.0)= 0.00479218	T(0.0,14.0)= 0.00000004
Do=308.51	R(0.0,14.5)= 0.00479218	T(0.0,14.5)= 0.00000002
Do=319.15	R(0.0,15.0)= 0.00479218	T(0.0,15.0)= 0.00000001

Do= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
Do= 10.64	R(0.5,0.0)= 0.00807783	T(0.5,0.0)= 0.29466818
Do= 21.28	R(1.0,0.0)= 0.00937807	T(1.0,0.0)= 0.08683216
Do= 31.91	R(1.5,0.0)= 0.00958073	T(1.5,0.0)= 0.02558764
Do= 42.55	R(2.0,0.0)= 0.00961403	T(2.0,0.0)= 0.00754015
Do= 53.19	R(2.5,0.0)= 0.00961937	T(2.5,0.0)= 0.00222193
Do= 63.83	R(3.0,0.0)= 0.00962022	T(3.0,0.0)= 0.00065476
Do= 74.47	R(3.5,0.0)= 0.00962036	T(3.5,0.0)= 0.00019294
Do= 85.11	R(4.0,0.0)= 0.00962038	T(4.0,0.0)= 0.00005686
Do= 95.74	R(4.5,0.0)= 0.00962039	T(4.5,0.0)= 0.00001675
Do=106.38	R(5.0,0.0)= 0.00962039	T(5.0,0.0)= 0.00000494
Do=117.02	R(5.5,0.0)= 0.00962039	T(5.5,0.0)= 0.00000145
Do=127.66	R(6.0,0.0)= 0.00962039	T(6.0,0.0)= 0.00000043
Do=138.30	R(6.5,0.0)= 0.00962039	T(6.5,0.0)= 0.00000013
Do=148.94	R(7.0,0.0)= 0.00962039	T(7.0,0.0)= 0.00000004
Do=159.57	R(7.5,0.0)= 0.00962039	T(7.5,0.0)= 0.00000001
Do=170.21	R(8.0,0.0)= 0.00962039	T(8.0,0.0)= 0.00000000
Do=180.85	R(8.5,0.0)= 0.00962039	T(8.5,0.0)= 0.00000000
Do=191.49	R(9.0,0.0)= 0.00962039	T(9.0,0.0)= 0.00000000
Do=202.13	R(9.5,0.0)= 0.00962039	T(9.5,0.0)= 0.00000000
Do=212.77	R(10.0,0.0)= 0.00962039	T(10.0,0.0)= 0.00000000
Do=223.40	R(10.5,0.0)= 0.00962039	T(10.5,0.0)= 0.00000000
Do=234.04	R(11.0,0.0)= 0.00962039	T(11.0,0.0)= 0.00000000
Do=244.68	R(11.5,0.0)= 0.00962039	T(11.5,0.0)= 0.00000000
Do=255.32	R(12.0,0.0)= 0.00962039	T(12.0,0.0)= 0.00000000
Do=265.96	R(12.5,0.0)= 0.00962039	T(12.5,0.0)= 0.00000000
Do=276.60	R(13.0,0.0)= 0.00962039	T(13.0,0.0)= 0.00000000
Do=287.23	R(13.5,0.0)= 0.00962039	T(13.5,0.0)= 0.00000000
Do=297.87	R(14.0,0.0)= 0.00962039	T(14.0,0.0)= 0.00000000
Do=308.51	R(14.5,0.0)= 0.00962039	T(14.5,0.0)= 0.00000000
Do=319.15	R(15.0,0.0)= 0.00962039	T(15.0,0.0)= 0.00000000

TABLE 2-A (CONTINUED)

R(0.0, 0.0,15.0)= 0.09479218	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.00260747	T(0.0, 0.5,15.0)= 0.54411055
R(0.0, 1.0,15.0)= 0.00141875	T(0.0, 1.0,15.0)= 0.29605629
R(0.0, 1.5,15.0)= 0.00077196	T(0.0, 1.5,15.0)= 0.16108735
R(0.0, 2.0,15.0)= 0.00042003	T(0.0, 2.0,15.0)= 0.08764033
R(0.0, 2.5,15.0)= 0.00022854	T(0.0, 2.5,15.0)= 0.04769092
R(0.0, 3.0,15.0)= 0.00012435	T(0.0, 3.0,15.0)= 0.02594913
R(0.0, 3.5,15.0)= 0.00006766	T(0.0, 3.5,15.0)= 0.01411920
R(0.0, 4.0,15.0)= 0.00003682	T(0.0, 4.0,15.0)= 0.00768240
R(0.0, 4.5,15.0)= 0.00002003	T(0.0, 4.5,15.0)= 0.00418008
R(0.0, 5.0,15.0)= 0.00001090	T(0.0, 5.0,15.0)= 0.00227442
R(0.0, 5.5,15.0)= 0.00000593	T(0.0, 5.5,15.0)= 0.00123754
R(0.0, 6.0,15.0)= 0.00000323	T(0.0, 6.0,15.0)= 0.00067336
R(0.0, 6.5,15.0)= 0.00000176	T(0.0, 6.5,15.0)= 0.00036638
R(0.0, 7.0,15.0)= 0.00000096	T(0.0, 7.0,15.0)= 0.00019935
R(0.0, 7.5,15.0)= 0.00000052	T(0.0, 7.5,15.0)= 0.00010847
R(0.0, 8.0,15.0)= 0.00000028	T(0.0, 8.0,15.0)= 0.00005902
R(0.0, 8.5,15.0)= 0.00000015	T(0.0, 8.5,15.0)= 0.00003211
R(0.0, 9.0,15.0)= 0.00000008	T(0.0, 9.0,15.0)= 0.00001747
R(0.0, 9.5,15.0)= 0.00000005	T(0.0, 9.5,15.0)= 0.00000951
R(0.0,10.0,15.0)= 0.00000002	T(0.0,10.0,15.0)= 0.00000517
R(0.0,10.5,15.0)= 0.00000001	T(0.0,10.5,15.0)= 0.00000281
R(0.0,11.0,15.0)= 0.00000001	T(0.0,11.0,15.0)= 0.00000153
R(0.0,11.5,15.0)= 0.00000000	T(0.0,11.5,15.0)= 0.00000083
R(0.0,12.0,15.0)= 0.00000000	T(0.0,12.0,15.0)= 0.00000045
R(0.0,12.5,15.0)= 0.00000000	T(0.0,12.5,15.0)= 0.00000025
R(0.0,13.0,15.0)= 0.00000000	T(0.0,13.0,15.0)= 0.00000013
R(0.0,13.5,15.0)= 0.00000000	T(0.0,13.5,15.0)= 0.00000007
R(0.0,14.0,15.0)= 0.00000000	T(0.0,14.0,15.0)= 0.00000004
R(0.0,14.5,15.0)= 0.00000000	T(0.0,14.5,15.0)= 0.00000002
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00000001

0.D0= 0.0	TR= 0.004792178151	IR= 1.000000000000
0.D0= 0.50	TR= 0.002607373739	IR= 1.000038712384
0.D0= 1.00	TR= 0.001418690747	IR= 1.000044919460
0.D0= 1.50	TR= 0.000771923831	IR= 1.000045914692
0.D0= 2.00	TR= 0.000420011831	IR= 1.000046074266
0.D0= 2.50	TR= 0.000228532861	IR= 1.000046099852
0.D0= 3.00	TR= 0.000124347140	IR= 1.000046103954
0.D0= 3.50	TR= 0.000067658590	IR= 1.000046104612
0.D0= 4.00	TR= 0.000036813753	IR= 1.000046104717
0.D0= 4.50	TR= 0.000020030751	IR= 1.000046104734
0.D0= 5.00	TR= 0.000010898943	IR= 1.000046104737
0.D0= 5.50	TR= 0.000005930230	IR= 1.000046104737
0.D0= 6.00	TR= 0.000003226701	IR= 1.000046104737
0.D0= 6.50	TR= 0.000001755682	IR= 1.000046104737
0.D0= 7.00	TR= 0.000000955285	IR= 1.000046104737
0.D0= 7.50	TR= 0.000000519781	IR= 1.000046104737
0.D0= 8.00	TR= 0.000000282818	IR= 1.000046104737
0.D0= 8.50	TR= 0.000000153884	IR= 1.000046104737
0.D0= 9.00	TR= 0.000000083730	IR= 1.000046104737
0.D0= 9.50	TR= 0.000000045558	IR= 1.000046104737
0.D0=10.00	TR= 0.000000024789	IR= 1.000046104737
0.D0=10.50	TR= 0.000000013488	IR= 1.000046104734
0.D0=11.00	TR= 0.000000007339	IR= 1.000046104717
0.D0=11.50	TR= 0.000000003993	IR= 1.000046104612
0.D0=12.00	TR= 0.000000002173	IR= 1.000046103954
0.D0=12.50	TR= 0.000000001182	IR= 1.000046099852
0.D0=13.00	TR= 0.000000000643	IR= 1.000046074266
0.D0=13.50	TR= 0.000000000349	IR= 1.000045914692
0.D0=14.00	TR= 0.000000000186	IR= 1.000044919460
0.D0=14.50	TR= 0.000000000087	IR= 1.000038712384
0.D0=15.00	TR= 0.0	IR= 1.000000000000

TABLE 2-B DISTILLED WATER B

A=0.042400 B=0.000620 D(+)=1.000000 D(-)=1.000000
A(+)=0.042400 A(-)=0.042400 B(+)=0.000620 B(-)=0.000620
S=0.00457000 ALPHA=0.04700000 RHO=0.09723404

Do= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
Do= 10.64	R(0.0, 0.5)= 0.00432081	T(0.0, 0.5)= 0.63277322
Do= 21.28	R(0.0, 1.0)= 0.00605090	T(0.0, 1.0)= 0.40040943
Do= 31.91	R(0.0, 1.5)= 0.00674366	T(0.0, 1.5)= 0.25337499
Do= 42.55	R(0.0, 2.0)= 0.00702106	T(0.0, 2.0)= 0.16033358
Do= 53.19	R(0.0, 2.5)= 0.00713214	T(0.0, 2.5)= 0.10145787
Do= 63.83	R(0.0, 3.0)= 0.00717662	T(0.0, 3.0)= 0.06420180
Do= 74.47	R(0.0, 3.5)= 0.00719443	T(0.0, 3.5)= 0.04062644
Do= 85.11	R(0.0, 4.0)= 0.00720156	T(0.0, 4.0)= 0.02570812
Do= 95.74	R(0.0, 4.5)= 0.00720442	T(0.0, 4.5)= 0.01626792
Do=106.38	R(0.0, 5.0)= 0.00720556	T(0.0, 5.0)= 0.01029422
Do=117.02	R(0.0, 5.5)= 0.00720602	T(0.0, 5.5)= 0.00651411
Do=127.66	R(0.0, 6.0)= 0.00720620	T(0.0, 6.0)= 0.00412208
Do=138.30	R(0.0, 6.5)= 0.00720628	T(0.0, 6.5)= 0.00260843
Do=148.94	R(0.0, 7.0)= 0.00720631	T(0.0, 7.0)= 0.00165059
Do=159.57	R(0.0, 7.5)= 0.00720632	T(0.0, 7.5)= 0.00104448
Do=170.21	R(0.0, 8.0)= 0.00720632	T(0.0, 8.0)= 0.00066094
Do=180.85	R(0.0, 8.5)= 0.00720632	T(0.0, 8.5)= 0.00041824
Do=191.49	R(0.0, 9.0)= 0.00720632	T(0.0, 9.0)= 0.00026466
Do=202.13	R(0.0, 9.5)= 0.00720632	T(0.0, 9.5)= 0.00016747
Do=212.77	R(0.0,10.0)= 0.00720632	T(0.0,10.0)= 0.00010598
Do=223.40	R(0.0,10.5)= 0.00720632	T(0.0,10.5)= 0.00006706
Do=234.04	R(0.0,11.0)= 0.00720632	T(0.0,11.0)= 0.00004244
Do=244.68	R(0.0,11.5)= 0.00720632	T(0.0,11.5)= 0.00002685
Do=255.32	R(0.0,12.0)= 0.00720632	T(0.0,12.0)= 0.00001699
Do=265.96	R(0.0,12.5)= 0.00720632	T(0.0,12.5)= 0.00001075
Do=276.60	R(0.0,13.0)= 0.00720632	T(0.0,13.0)= 0.00000680
Do=287.23	R(0.0,13.5)= 0.00720632	T(0.0,13.5)= 0.00000431
Do=297.87	R(0.0,14.0)= 0.00720632	T(0.0,14.0)= 0.00000272
Do=308.51	R(0.0,14.5)= 0.00720632	T(0.0,14.5)= 0.00000172
Do=319.15	R(0.0,15.0)= 0.00720632	T(0.0,15.0)= 0.00000109

Do= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
Do= 10.64	R(0.5,0.0)= 0.00432081	T(0.5,0.0)= 0.63277322
Do= 21.28	R(1.0,0.0)= 0.00605090	T(1.0,0.0)= 0.40040943
Do= 31.91	R(1.5,0.0)= 0.00674366	T(1.5,0.0)= 0.25337499
Do= 42.55	R(2.0,0.0)= 0.00702106	T(2.0,0.0)= 0.16033358
Do= 53.19	R(2.5,0.0)= 0.00713214	T(2.5,0.0)= 0.10145787
Do= 63.83	R(3.0,0.0)= 0.00717662	T(3.0,0.0)= 0.06420180
Do= 74.47	R(3.5,0.0)= 0.00719443	T(3.5,0.0)= 0.04062644
Do= 85.11	R(4.0,0.0)= 0.00720156	T(4.0,0.0)= 0.02570812
Do= 95.74	R(4.5,0.0)= 0.00720442	T(4.5,0.0)= 0.01626792
Do=106.38	R(5.0,0.0)= 0.00720556	T(5.0,0.0)= 0.01029422
Do=117.02	R(5.5,0.0)= 0.00720602	T(5.5,0.0)= 0.00651411
Do=127.66	R(6.0,0.0)= 0.00720620	T(6.0,0.0)= 0.00412208
Do=138.30	R(6.5,0.0)= 0.00720628	T(6.5,0.0)= 0.00260843
Do=148.94	R(7.0,0.0)= 0.00720631	T(7.0,0.0)= 0.00165059
Do=159.57	R(7.5,0.0)= 0.00720632	T(7.5,0.0)= 0.00104448
Do=170.21	R(8.0,0.0)= 0.00720632	T(8.0,0.0)= 0.00066094
Do=180.85	R(8.5,0.0)= 0.00720632	T(8.5,0.0)= 0.00041824
Do=191.49	R(9.0,0.0)= 0.00720632	T(9.0,0.0)= 0.00026466
Do=202.13	R(9.5,0.0)= 0.00720632	T(9.5,0.0)= 0.00016747
Do=212.77	R(10.0,0.0)= 0.00720632	T(10.0,0.0)= 0.00010598
Do=223.40	R(10.5,0.0)= 0.00720632	T(10.5,0.0)= 0.00006706
Do=234.04	R(11.0,0.0)= 0.00720632	T(11.0,0.0)= 0.00004244
Do=244.68	R(11.5,0.0)= 0.00720632	T(11.5,0.0)= 0.00002685
Do=255.32	R(12.0,0.0)= 0.00720632	T(12.0,0.0)= 0.00001699
Do=265.96	R(12.5,0.0)= 0.00720632	T(12.5,0.0)= 0.00001075
Do=276.60	R(13.0,0.0)= 0.00720632	T(13.0,0.0)= 0.00000680
Do=287.23	R(13.5,0.0)= 0.00720632	T(13.5,0.0)= 0.00000431
Do=297.87	R(14.0,0.0)= 0.00720632	T(14.0,0.0)= 0.00000272
Do=308.51	R(14.5,0.0)= 0.00720632	T(14.5,0.0)= 0.00000172
Do=319.15	R(15.0,0.0)= 0.00720632	T(15.0,0.0)= 0.00000109

TABLE 2-8 (CONTINUED)

R(0.0, 0.0,15.0)= 0.00720632	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.00456011	T(0.0, 0.5,15.0)= 0.63279292
R(0.0, 1.0,15.0)= 0.00288561	T(0.0, 1.0,15.0)= 0.40042689
R(0.0, 1.5,15.0)= 0.00182599	T(0.0, 1.5,15.0)= 0.25338730
R(0.0, 2.0,15.0)= 0.00115547	T(0.0, 2.0,15.0)= 0.16034169
R(0.0, 2.5,15.0)= 0.00073118	T(0.0, 2.5,15.0)= 0.10146309
R(0.0, 3.0,15.0)= 0.00046268	T(0.0, 3.0,15.0)= 0.06420512
R(0.0, 3.5,15.0)= 0.00029278	T(0.0, 3.5,15.0)= 0.04062355
R(0.0, 4.0,15.0)= 0.00018527	T(0.0, 4.0,15.0)= 0.02570946
R(0.0, 4.5,15.0)= 0.00011724	T(0.0, 4.5,15.0)= 0.01626876
R(0.0, 5.0,15.0)= 0.00007419	T(0.0, 5.0,15.0)= 0.01029476
R(0.0, 5.5,15.0)= 0.00004695	T(0.0, 5.5,15.0)= 0.00651445
R(0.0, 6.0,15.0)= 0.00002971	T(0.0, 6.0,15.0)= 0.00412230
R(0.0, 6.5,15.0)= 0.00001880	T(0.0, 6.5,15.0)= 0.00260856
R(0.0, 7.0,15.0)= 0.00001190	T(0.0, 7.0,15.0)= 0.00165068
R(0.0, 7.5,15.0)= 0.00000753	T(0.0, 7.5,15.0)= 0.00104454
R(0.0, 8.0,15.0)= 0.00000476	T(0.0, 8.0,15.0)= 0.00066098
R(0.0, 8.5,15.0)= 0.00000301	T(0.0, 8.5,15.0)= 0.00041826
R(0.0, 9.0,15.0)= 0.00000191	T(0.0, 9.0,15.0)= 0.00026467
R(0.0, 9.5,15.0)= 0.00000121	T(0.0, 9.5,15.0)= 0.00016748
R(0.0,10.0,15.0)= 0.00000076	T(0.0,10.0,15.0)= 0.00010598
R(0.0,10.5,15.0)= 0.00000048	T(0.0,10.5,15.0)= 0.00006706
R(0.0,11.0,15.0)= 0.00000031	T(0.0,11.0,15.0)= 0.00004244
R(0.0,11.5,15.0)= 0.00000019	T(0.0,11.5,15.0)= 0.00002685
R(0.0,12.0,15.0)= 0.00000012	T(0.0,12.0,15.0)= 0.00001699
R(0.0,12.5,15.0)= 0.00000008	T(0.0,12.5,15.0)= 0.00001075
R(0.0,13.0,15.0)= 0.00000005	T(0.0,13.0,15.0)= 0.00000680
R(0.0,13.5,15.0)= 0.00000003	T(0.0,13.5,15.0)= 0.00000431
R(0.0,14.0,15.0)= 0.00000002	T(0.0,14.0,15.0)= 0.00000272
R(0.0,14.5,15.0)= 0.00000001	T(0.0,14.5,15.0)= 0.00000172
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00000109

0.D.= 0.0	TR= 0.007206324934	IR= 1.000000000000
0.D.= 0.50	TR= 0.004559969443	IR= 1.000031138120
0.D.= 1.00	TR= 0.002885480424	IR= 1.000043606660
0.D.= 1.50	TR= 0.001825902481	IR= 1.000048599399
0.D.= 2.00	TR= 0.001155415862	IR= 1.000050598626
0.D.= 2.50	TR= 0.000731138397	IR= 1.000051399170
0.D.= 3.00	TR= 0.000462659056	IR= 1.000051719729
0.D.= 3.50	TR= 0.000292767340	IR= 1.000051848090
0.D.= 4.00	TR= 0.000185261091	IR= 1.000051899489
0.D.= 4.50	TR= 0.000117231905	IR= 1.000051920070
0.D.= 5.00	TR= 0.000074183519	IR= 1.000051928311
0.D.= 5.50	TR= 0.000046942805	IR= 1.000051931611
0.D.= 6.00	TR= 0.000029705074	IR= 1.000051932930
0.D.= 6.50	TR= 0.000018797158	IR= 1.000051933454
0.D.= 7.00	TR= 0.000011894706	IR= 1.000051933652
0.D.= 7.50	TR= 0.000007526881	IR= 1.000051933703
0.D.= 8.00	TR= 0.000004762949	IR= 1.000051933652
0.D.= 8.50	TR= 0.000003013948	IR= 1.000051933454
0.D.= 9.00	TR= 0.000001907186	IR= 1.000051932930
0.D.= 9.50	TR= 0.000001206823	IR= 1.000051931611
0.D.=10.00	TR= 0.000000763620	IR= 1.000051928311
0.D.=10.50	TR= 0.000000483137	IR= 1.000051920070
0.D.=11.00	TR= 0.000000305604	IR= 1.000051899489
0.D.=11.50	TR= 0.000000193193	IR= 1.000051848090
0.D.=12.00	TR= 0.000000121948	IR= 1.000051719729
0.D.=12.50	TR= 0.000000076690	IR= 1.000051399170
0.D.=13.00	TR= 0.000000047773	IR= 1.000050598626
0.D.=13.50	TR= 0.000000029036	IR= 1.000048599399
0.D.=14.00	TR= 0.000000016486	IR= 1.000043606660
0.D.=14.50	TR= 0.000000007450	IR= 1.000031138120
0.D.=15.00	TR= 0.0	IR= 1.000000000000

TABLE 3-A PACIFIC COASTAL WATER 1

A=0.611000 B=0.006300 D(+)=2.670000 D(-)=1.330000
A(+)=1.631370 A(-)=0.812630 B(+)=0.016821 B(-)=0.008379
S=0.12500000 ALPHA=0.73600000 RHO=0.16983696

D= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
D= 0.68	R(0.0, 0.5)= 0.00275937	T(0.0, 0.5)= 0.57250678
D= 1.36	R(0.0, 1.0)= 0.00327499	T(0.0, 1.0)= 0.32776902
D= 2.04	R(0.0, 1.5)= 0.00327134	T(0.0, 1.5)= 0.18765339
D= 2.72	R(0.0, 2.0)= 0.00328935	T(0.0, 2.0)= 0.10743485
D= 3.40	R(0.0, 2.5)= 0.00329271	T(0.0, 2.5)= 0.06150833
D= 4.08	R(0.0, 3.0)= 0.00329334	T(0.0, 3.0)= 0.03521460
D= 4.76	R(0.0, 3.5)= 0.00329346	T(0.0, 3.5)= 0.02016093
D= 5.43	R(0.0, 4.0)= 0.00329348	T(0.0, 4.0)= 0.01154251
D= 6.11	R(0.0, 4.5)= 0.00329348	T(0.0, 4.5)= 0.00660829
D= 6.79	R(0.0, 5.0)= 0.00329349	T(0.0, 5.0)= 0.00378336
D= 7.47	R(0.0, 5.5)= 0.00329349	T(0.0, 5.5)= 0.00216604
D= 8.15	R(0.0, 6.0)= 0.00329349	T(0.0, 6.0)= 0.00124010
D= 8.83	R(0.0, 6.5)= 0.00329349	T(0.0, 6.5)= 0.00070993
D= 9.51	R(0.0, 7.0)= 0.00329349	T(0.0, 7.0)= 0.00040647
D= 10.19	R(0.0, 7.5)= 0.00329349	T(0.0, 7.5)= 0.00023271
D= 10.87	R(0.0, 8.0)= 0.00329349	T(0.0, 8.0)= 0.00013323
D= 11.55	R(0.0, 8.5)= 0.00329349	T(0.0, 8.5)= 0.00007628
D= 12.23	R(0.0, 9.0)= 0.00329349	T(0.0, 9.0)= 0.00004367
D= 12.91	R(0.0, 9.5)= 0.00329349	T(0.0, 9.5)= 0.00002500
D= 13.59	R(0.0,10.0)= 0.00329349	T(0.0,10.0)= 0.00001431
D= 14.27	R(0.0,10.5)= 0.00329349	T(0.0,10.5)= 0.00000820
D= 14.95	R(0.0,11.0)= 0.00329349	T(0.0,11.0)= 0.00000469
D= 15.63	R(0.0,11.5)= 0.00329349	T(0.0,11.5)= 0.00000269
D= 16.30	R(0.0,12.0)= 0.00329349	T(0.0,12.0)= 0.00000154
D= 16.98	R(0.0,12.5)= 0.00329349	T(0.0,12.5)= 0.00000088
D= 17.66	R(0.0,13.0)= 0.00329349	T(0.0,13.0)= 0.00000050
D= 18.34	R(0.0,13.5)= 0.00329349	T(0.0,13.5)= 0.00000029
D= 19.02	R(0.0,14.0)= 0.00329349	T(0.0,14.0)= 0.00000017
D= 19.70	R(0.0,14.5)= 0.00329349	T(0.0,14.5)= 0.00000009
D= 20.38	R(0.0,15.0)= 0.00329349	T(0.0,15.0)= 0.00000005

D= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
D= 0.68	R(0.5,0.0)= 0.00553949	T(0.5,0.0)= 0.32638586
D= 1.36	R(1.0,0.0)= 0.00657461	T(1.0,0.0)= 0.10652935
D= 2.04	R(1.5,0.0)= 0.00676803	T(1.5,0.0)= 0.03477031
D= 2.72	R(2.0,0.0)= 0.00680418	T(2.0,0.0)= 0.01134875
D= 3.40	R(2.5,0.0)= 0.00681093	T(2.5,0.0)= 0.00370414
D= 4.08	R(3.0,0.0)= 0.00681220	T(3.0,0.0)= 0.00120900
D= 4.76	R(3.5,0.0)= 0.00681243	T(3.5,0.0)= 0.00039461
D= 5.43	R(4.0,0.0)= 0.00681248	T(4.0,0.0)= 0.00012880
D= 6.11	R(4.5,0.0)= 0.00681248	T(4.5,0.0)= 0.00004204
D= 6.79	R(5.0,0.0)= 0.00681249	T(5.0,0.0)= 0.00001372
D= 7.47	R(5.5,0.0)= 0.00681249	T(5.5,0.0)= 0.00000448
D= 8.15	R(6.0,0.0)= 0.00681249	T(6.0,0.0)= 0.00000146
D= 8.83	R(6.5,0.0)= 0.00681249	T(6.5,0.0)= 0.00000048
D= 9.51	R(7.0,0.0)= 0.00681249	T(7.0,0.0)= 0.00000016
D= 10.19	R(7.5,0.0)= 0.00681249	T(7.5,0.0)= 0.00000005
D= 10.87	R(8.0,0.0)= 0.00681249	T(8.0,0.0)= 0.00000002
D= 11.55	R(8.5,0.0)= 0.00681249	T(8.5,0.0)= 0.00000001
D= 12.23	R(9.0,0.0)= 0.00681249	T(9.0,0.0)= 0.00000000
D= 12.91	R(9.5,0.0)= 0.00681249	T(9.5,0.0)= 0.00000000
D= 13.59	R(10.0,0.0)= 0.00681249	T(10.0,0.0)= 0.00000000
D= 14.27	R(10.5,0.0)= 0.00681249	T(10.5,0.0)= 0.00000000
D= 14.95	R(11.0,0.0)= 0.00681249	T(11.0,0.0)= 0.00000000
D= 15.63	R(11.5,0.0)= 0.00681249	T(11.5,0.0)= 0.00000000
D= 16.30	R(12.0,0.0)= 0.00681249	T(12.0,0.0)= 0.00000000
D= 16.98	R(12.5,0.0)= 0.00681249	T(12.5,0.0)= 0.00000000
D= 17.66	R(13.0,0.0)= 0.00681249	T(13.0,0.0)= 0.00000000
D= 18.34	R(13.5,0.0)= 0.00681249	T(13.5,0.0)= 0.00000000
D= 19.02	R(14.0,0.0)= 0.00681249	T(14.0,0.0)= 0.00000000
D= 19.70	R(14.5,0.0)= 0.00681249	T(14.5,0.0)= 0.00000000
D= 20.38	R(15.0,0.0)= 0.00681249	T(15.0,0.0)= 0.00000000

TABLE 3-A (CONTINUED)

R(0.0, 0.0,15.0)=	0.00339349	T(0.0, 0.0,15.0)=	1.00000000
R(0.0, 0.5,15.0)=	0.00194283	T(0.0, 0.5,15.0)=	0.57251754
R(0.0, 1.0,15.0)=	0.00111230	T(0.0, 1.0,15.0)=	0.32777634
R(0.0, 1.5,15.0)=	0.00063681	T(0.0, 1.5,15.0)=	0.18765770
R(0.0, 2.0,15.0)=	0.00036459	T(0.0, 2.0,15.0)=	0.10743733
R(0.0, 2.5,15.0)=	0.00020873	T(0.0, 2.5,15.0)=	0.06150975
R(0.0, 3.0,15.0)=	0.00011950	T(0.0, 3.0,15.0)=	0.03521541
R(0.0, 3.5,15.0)=	0.00006842	T(0.0, 3.5,15.0)=	0.02016144
R(0.0, 4.0,15.0)=	0.00003917	T(0.0, 4.0,15.0)=	0.01154278
R(0.0, 4.5,15.0)=	0.00002243	T(0.0, 4.5,15.0)=	0.00660844
R(0.0, 5.0,15.0)=	0.00001284	T(0.0, 5.0,15.0)=	0.00378345
R(0.0, 5.5,15.0)=	0.00000735	T(0.0, 5.5,15.0)=	0.00216609
R(0.0, 6.0,15.0)=	0.00000421	T(0.0, 6.0,15.0)=	0.00124013
R(0.0, 6.5,15.0)=	0.00000241	T(0.0, 6.5,15.0)=	0.00070999
R(0.0, 7.0,15.0)=	0.00000138	T(0.0, 7.0,15.0)=	0.00040648
R(0.0, 7.5,15.0)=	0.00000079	T(0.0, 7.5,15.0)=	0.00023272
R(0.0, 8.0,15.0)=	0.00000045	T(0.0, 8.0,15.0)=	0.00013324
R(0.0, 8.5,15.0)=	0.00000026	T(0.0, 8.5,15.0)=	0.00007628
R(0.0, 9.0,15.0)=	0.00000015	T(0.0, 9.0,15.0)=	0.00004367
R(0.0, 9.5,15.0)=	0.00000008	T(0.0, 9.5,15.0)=	0.00002500
R(0.0,10.0,15.0)=	0.00000005	T(0.0,10.0,15.0)=	0.00001431
R(0.0,10.5,15.0)=	0.00000003	T(0.0,10.5,15.0)=	0.00000820
R(0.0,11.0,15.0)=	0.00000002	T(0.0,11.0,15.0)=	0.00000469
R(0.0,11.5,15.0)=	0.00000001	T(0.0,11.5,15.0)=	0.00000269
R(0.0,12.0,15.0)=	0.00000001	T(0.0,12.0,15.0)=	0.00000154
R(0.0,12.5,15.0)=	0.00000000	T(0.0,12.5,15.0)=	0.00000088
R(0.0,13.0,15.0)=	0.00000000	T(0.0,13.0,15.0)=	0.00000050
R(0.0,13.5,15.0)=	0.00000000	T(0.0,13.5,15.0)=	0.00000029
R(0.0,14.0,15.0)=	0.00000000	T(0.0,14.0,15.0)=	0.00000017
R(0.0,14.5,15.0)=	0.00000000	T(0.0,14.5,15.0)=	0.00000009
R(0.0,15.0,15.0)=	0.0	T(0.0,15.0,15.0)=	0.00000005

0.D0= 0.0	TR= 0.003393485220	IR= 1.000000000000
0.D0= 0.50	TR= 0.001942793299	IR= 1.000018798542
0.D0= 1.00	TR= 0.001112279340	IR= 1.000022311334
0.D0= 1.50	TR= 0.000636799017	IR= 1.000022967752
0.D0= 2.00	TR= 0.000364578564	IR= 1.000023090414
0.D0= 2.50	TR= 0.000208727619	IR= 1.000023113335
0.D0= 3.00	TR= 0.000119500223	IR= 1.000023117619
0.D0= 3.50	TR= 0.000068415974	IR= 1.000023118419
0.D0= 4.00	TR= 0.000039169345	IR= 1.000023118568
0.D0= 4.50	TR= 0.000022425137	IR= 1.000023118596
0.D0= 5.00	TR= 0.000012838785	IR= 1.000023118602
0.D0= 5.50	TR= 0.000007350429	IR= 1.000023118603
0.D0= 6.00	TR= 0.000004208250	IR= 1.000023118603
0.D0= 6.50	TR= 0.000002409297	IR= 1.000023118603
0.D0= 7.00	TR= 0.000001379365	IR= 1.000023118603
0.D0= 7.50	TR= 0.000000789710	IR= 1.000023118603
0.D0= 8.00	TR= 0.000000452123	IR= 1.000023118603
0.D0= 8.50	TR= 0.000000258848	IR= 1.000023118603
0.D0= 9.00	TR= 0.000000148195	IR= 1.000023118603
0.D0= 9.50	TR= 0.000000084844	IR= 1.000023118603
0.D0=10.00	TR= 0.000000048575	IR= 1.000023118602
0.D0=10.50	TR= 0.000000027810	IR= 1.000023118596
0.D0=11.00	TR= 0.000000015922	IR= 1.000023118568
0.D0=11.50	TR= 0.000000009115	IR= 1.000023118419
0.D0=12.00	TR= 0.000000005219	IR= 1.000023117619
0.D0=12.50	TR= 0.000000002987	IR= 1.000023113335
0.D0=13.00	TR= 0.000000001708	IR= 1.000023090414
0.D0=13.50	TR= 0.000000000973	IR= 1.000022967752
0.D0=14.00	TR= 0.000000000541	IR= 1.000022311334
0.D0=14.50	TR= 0.000000000261	IR= 1.000018798542
0.D0=15.00	TR= 0.0	IR= 1.000000000000

TABLE 3-B PACIFIC COASTAL WATER 1

A=0.611000 B=0.006300 D(+)=1.000000 D(-)=1.000000
A(+)=0.611000 A(-)=0.611000 B(+)=0.006300 B(-)=0.006300
S=0.1250000 ALPHA=0.73600000 RHO=0.16983696

D= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
D= 0.68	R(0.0, 0.5)= 0.00289710	T(0.0, 0.5)= 0.65747117
D= 1.36	R(0.0, 1.0)= 0.00414944	T(0.0, 1.0)= 0.43227197
D= 2.04	R(0.0, 1.5)= 0.00469079	T(0.0, 1.5)= 0.28420978
D= 2.72	R(0.0, 2.0)= 0.00492481	T(0.0, 2.0)= 0.18686228
D= 3.40	R(0.0, 2.5)= 0.00502597	T(0.0, 2.5)= 0.12285831
D= 4.08	R(0.0, 3.0)= 0.00506970	T(0.0, 3.0)= 0.08077698
D= 4.76	R(0.0, 3.5)= 0.00508861	T(0.0, 3.5)= 0.05310931
D= 5.43	R(0.0, 4.0)= 0.00509678	T(0.0, 4.0)= 0.03491836
D= 6.11	R(0.0, 4.5)= 0.00510031	T(0.0, 4.5)= 0.02295815
D= 6.79	R(0.0, 5.0)= 0.00510184	T(0.0, 5.0)= 0.01509455
D= 7.47	R(0.0, 5.5)= 0.00510250	T(0.0, 5.5)= 0.00992438
D= 8.15	R(0.0, 6.0)= 0.00510278	T(0.0, 6.0)= 0.00652509
D= 8.83	R(0.0, 6.5)= 0.00510291	T(0.0, 6.5)= 0.00429012
D= 9.51	R(0.0, 7.0)= 0.00510296	T(0.0, 7.0)= 0.00282067
D= 10.19	R(0.0, 7.5)= 0.00510298	T(0.0, 7.5)= 0.00185454
D= 10.87	R(0.0, 8.0)= 0.00510299	T(0.0, 8.0)= 0.00121932
D= 11.55	R(0.0, 8.5)= 0.00510300	T(0.0, 8.5)= 0.00080168
D= 12.23	R(0.0, 9.0)= 0.00510300	T(0.0, 9.0)= 0.00052709
D= 12.91	R(0.0, 9.5)= 0.00510300	T(0.0, 9.5)= 0.00034655
D= 13.59	R(0.0,10.0)= 0.00510300	T(0.0,10.0)= 0.00022785
D= 14.27	R(0.0,10.5)= 0.00510300	T(0.0,10.5)= 0.00014981
D= 14.95	R(0.0,11.0)= 0.00510300	T(0.0,11.0)= 0.00009850
D= 15.63	R(0.0,11.5)= 0.00510300	T(0.0,11.5)= 0.00006476
D= 16.30	R(0.0,12.0)= 0.00510300	T(0.0,12.0)= 0.00004258
D= 16.98	R(0.0,12.5)= 0.00510300	T(0.0,12.5)= 0.00002799
D= 17.66	R(0.0,13.0)= 0.00510300	T(0.0,13.0)= 0.00001841
D= 18.34	R(0.0,13.5)= 0.00510300	T(0.0,13.5)= 0.00001210
D= 19.02	R(0.0,14.0)= 0.00510300	T(0.0,14.0)= 0.00000796
D= 19.70	R(0.0,14.5)= 0.00510300	T(0.0,14.5)= 0.00000523
D= 20.38	R(0.0,15.0)= 0.00510300	T(0.0,15.0)= 0.00000344

D= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
D= 0.68	R(0.5,0.0)= 0.00289710	T(0.5,0.0)= 0.65747117
D= 1.36	R(1.0,0.0)= 0.00414944	T(1.0,0.0)= 0.43227197
D= 2.04	R(1.5,0.0)= 0.00469079	T(1.5,0.0)= 0.28420978
D= 2.72	R(2.0,0.0)= 0.00492481	T(2.0,0.0)= 0.18686228
D= 3.40	R(2.5,0.0)= 0.00502597	T(2.5,0.0)= 0.12285831
D= 4.08	R(3.0,0.0)= 0.00506970	T(3.0,0.0)= 0.08077698
D= 4.76	R(3.5,0.0)= 0.00508861	T(3.5,0.0)= 0.05310931
D= 5.43	R(4.0,0.0)= 0.00509678	T(4.0,0.0)= 0.03491836
D= 6.11	R(4.5,0.0)= 0.00510031	T(4.5,0.0)= 0.02295815
D= 6.79	R(5.0,0.0)= 0.00510184	T(5.0,0.0)= 0.01509455
D= 7.47	R(5.5,0.0)= 0.00510250	T(5.5,0.0)= 0.00992438
D= 8.15	R(6.0,0.0)= 0.00510278	T(6.0,0.0)= 0.00652509
D= 8.83	R(6.5,0.0)= 0.00510291	T(6.5,0.0)= 0.00429012
D= 9.51	R(7.0,0.0)= 0.00510296	T(7.0,0.0)= 0.00282067
D= 10.19	R(7.5,0.0)= 0.00510298	T(7.5,0.0)= 0.00185454
D= 10.87	R(8.0,0.0)= 0.00510299	T(8.0,0.0)= 0.00121932
D= 11.55	R(8.5,0.0)= 0.00510300	T(8.5,0.0)= 0.00080168
D= 12.23	R(9.0,0.0)= 0.00510300	T(9.0,0.0)= 0.00052709
D= 12.91	R(9.5,0.0)= 0.00510300	T(9.5,0.0)= 0.00034655
D= 13.59	R(10.0,0.0)= 0.00510300	T(10.0,0.0)= 0.00022785
D= 14.27	R(10.5,0.0)= 0.00510300	T(10.5,0.0)= 0.00014981
D= 14.95	R(11.0,0.0)= 0.00510300	T(11.0,0.0)= 0.00009850
D= 15.63	R(11.5,0.0)= 0.00510300	T(11.5,0.0)= 0.00006476
D= 16.30	R(12.0,0.0)= 0.00510300	T(12.0,0.0)= 0.00004258
D= 16.98	R(12.5,0.0)= 0.00510300	T(12.5,0.0)= 0.00002799
D= 17.66	R(13.0,0.0)= 0.00510300	T(13.0,0.0)= 0.00001841
D= 18.34	R(13.5,0.0)= 0.00510300	T(13.5,0.0)= 0.00001210
D= 19.02	R(14.0,0.0)= 0.00510300	T(14.0,0.0)= 0.00000796
D= 19.70	R(14.5,0.0)= 0.00510300	T(14.5,0.0)= 0.00000523
D= 20.38	R(15.0,0.0)= 0.00510300	T(15.0,0.0)= 0.00000344

TABLE 3-B (CONTINUED)

R(0.0, 0.0,15.0)= 0.00510300	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.00335513	T(0.0, 0.5,15.0)= 0.65748089
R(0.0, 1.0,15.0)= 0.00220593	T(0.0, 1.0,15.0)= 0.43228113
R(0.0, 1.5,15.0)= 0.00145036	T(0.0, 1.5,15.0)= 0.28421658
R(0.0, 2.0,15.0)= 0.00095358	T(0.0, 2.0,15.0)= 0.18686697
R(0.0, 2.5,15.0)= 0.00062696	T(0.0, 2.5,15.0)= 0.12286146
R(0.0, 3.0,15.0)= 0.00041222	T(0.0, 3.0,15.0)= 0.08077907
R(0.0, 3.5,15.0)= 0.00027102	T(0.0, 3.5,15.0)= 0.05311069
R(0.0, 4.0,15.0)= 0.00017819	T(0.0, 4.0,15.0)= 0.03491927
R(0.0, 4.5,15.0)= 0.00011716	T(0.0, 4.5,15.0)= 0.02295875
R(0.0, 5.0,15.0)= 0.00007703	T(0.0, 5.0,15.0)= 0.01509494
R(0.0, 5.5,15.0)= 0.00005065	T(0.0, 5.5,15.0)= 0.00992463
R(0.0, 6.0,15.0)= 0.00003330	T(0.0, 6.0,15.0)= 0.00652526
R(0.0, 6.5,15.0)= 0.00002189	T(0.0, 6.5,15.0)= 0.00429023
R(0.0, 7.0,15.0)= 0.00001439	T(0.0, 7.0,15.0)= 0.00282075
R(0.0, 7.5,15.0)= 0.00000946	T(0.0, 7.5,15.0)= 0.00185459
R(0.0, 8.0,15.0)= 0.00000622	T(0.0, 8.0,15.0)= 0.00121936
R(0.0, 8.5,15.0)= 0.00000409	T(0.0, 8.5,15.0)= 0.00080170
R(0.0, 9.0,15.0)= 0.00000269	T(0.0, 9.0,15.0)= 0.00052710
R(0.0, 9.5,15.0)= 0.00000177	T(0.0, 9.5,15.0)= 0.00034656
R(0.0,10.0,15.0)= 0.00000116	T(0.0,10.0,15.0)= 0.00022786
R(0.0,10.5,15.0)= 0.00000076	T(0.0,10.5,15.0)= 0.00014981
R(0.0,11.0,15.0)= 0.00000050	T(0.0,11.0,15.0)= 0.00009850
R(0.0,11.5,15.0)= 0.00000033	T(0.0,11.5,15.0)= 0.00006476
R(0.0,12.0,15.0)= 0.00000022	T(0.0,12.0,15.0)= 0.00004258
R(0.0,12.5,15.0)= 0.00000014	T(0.0,12.5,15.0)= 0.00002799
R(0.0,13.0,15.0)= 0.00000009	T(0.0,13.0,15.0)= 0.00001841
R(0.0,13.5,15.0)= 0.00000006	T(0.0,13.5,15.0)= 0.00001210
R(0.0,14.0,15.0)= 0.00000003	T(0.0,14.0,15.0)= 0.00000796
R(0.0,14.5,15.0)= 0.00000002	T(0.0,14.5,15.0)= 0.00000523
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00000344

D.D.= 0.0	TR= 0.005103000207	IR= 1.000000000000
D.D.= 0.50	TR= 0.003355075540	IR= 1.000014784131
D.D.= 1.00	TR= 0.002205883971	IR= 1.000021175032
D.D.= 1.50	TR= 0.001450322560	IR= 1.000023937698
D.D.= 2.00	TR= 0.000953558235	IR= 1.000025131947
D.D.= 2.50	TR= 0.000626945998	IR= 1.000025648198
D.D.= 3.00	TR= 0.000412204923	IR= 1.000025871363
D.D.= 3.50	TR= 0.000271016835	IR= 1.000025967833
D.D.= 4.00	TR= 0.000178188383	IR= 1.000026009535
D.D.= 4.50	TR= 0.000117155454	IR= 1.000026027562
D.D.= 5.00	TR= 0.000077027470	IR= 1.000026035354
D.D.= 5.50	TR= 0.000050644086	IR= 1.000026038721
D.D.= 6.00	TR= 0.000033297514	IR= 1.000026040173
D.D.= 6.50	TR= 0.000021892471	IR= 1.000026040793
D.D.= 7.00	TR= 0.000014393869	IR= 1.000026041043
D.D.= 7.50	TR= 0.000009463676	IR= 1.000026041110
D.D.= 8.00	TR= 0.000006222158	IR= 1.000026041043
D.D.= 8.50	TR= 0.000004090907	IR= 1.000026040793
D.D.= 9.00	TR= 0.000002689628	IR= 1.000026040173
D.D.= 9.50	TR= 0.000001768280	IR= 1.000026038721
D.D.=10.00	TR= 0.000001162460	IR= 1.000026035354
D.D.=10.50	TR= 0.000000764067	IR= 1.000026027562
D.D.=11.00	TR= 0.000000502011	IR= 1.000026009535
D.D.=11.50	TR= 0.000000329534	IR= 1.000025967833
D.D.=12.00	TR= 0.000000215857	IR= 1.000025871363
D.D.=12.50	TR= 0.000000140698	IR= 1.000025648198
D.D.=13.00	TR= 0.000000090644	IR= 1.000025131947
D.D.=13.50	TR= 0.000000056765	IR= 1.000023937698
D.D.=14.00	TR= 0.000000033015	IR= 1.000021175032
D.D.=14.50	TR= 0.000000015155	IR= 1.000014784131
D.D.=15.00	TR= 0.0	IR= 1.000000000000

TABLE 4-A PACIFIC COASTAL WATER 2

A=0.118100 B=0.000847 D(+)=2.670000 D(-)=1.330000
A(+)=0.315327 A(-)=0.157073 B(+)=0.002261 B(-)=0.001127
S=0.01094000 ALPHA=0.12900000 RHO=0.08480620

D= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
D= 3.88	R(0.0, 0.5)= 0.00199321	T(0.0, 0.5)= 0.54163382
D= 7.75	R(0.0, 1.0)= 0.00230847	T(0.0, 1.0)= 0.29336953
D= 11.63	R(0.0, 1.5)= 0.00235833	T(0.0, 1.5)= 0.15890033
D= 15.50	R(0.0, 2.0)= 0.00236622	T(0.0, 2.0)= 0.08606660
D= 19.38	R(0.0, 2.5)= 0.00236746	T(0.0, 2.5)= 0.04661703
D= 23.26	R(0.0, 3.0)= 0.00236766	T(0.0, 3.0)= 0.02524960
D= 27.13	R(0.0, 3.5)= 0.00236769	T(0.0, 3.5)= 0.01367616
D= 31.01	R(0.0, 4.0)= 0.00236770	T(0.0, 4.0)= 0.00740754
D= 34.88	R(0.0, 4.5)= 0.00236770	T(0.0, 4.5)= 0.00401221
D= 38.76	R(0.0, 5.0)= 0.00236770	T(0.0, 5.0)= 0.00217317
D= 42.64	R(0.0, 5.5)= 0.00236770	T(0.0, 5.5)= 0.00117707
D= 46.51	R(0.0, 6.0)= 0.00236770	T(0.0, 6.0)= 0.00063755
D= 50.39	R(0.0, 6.5)= 0.00236770	T(0.0, 6.5)= 0.00034532
D= 54.26	R(0.0, 7.0)= 0.00236770	T(0.0, 7.0)= 0.00018704
D= 58.14	R(0.0, 7.5)= 0.00236770	T(0.0, 7.5)= 0.00010131
D= 62.02	R(0.0, 8.0)= 0.00236770	T(0.0, 8.0)= 0.00005487
D= 65.89	R(0.0, 8.5)= 0.00236770	T(0.0, 8.5)= 0.00002972
D= 69.77	R(0.0, 9.0)= 0.00236770	T(0.0, 9.0)= 0.00001610
D= 73.64	R(0.0, 9.5)= 0.00236770	T(0.0, 9.5)= 0.00000872
D= 77.52	R(0.0,10.0)= 0.00236770	T(0.0,10.0)= 0.00000472
D= 81.40	R(0.0,10.5)= 0.00236770	T(0.0,10.5)= 0.00000256
D= 85.27	R(0.0,11.0)= 0.00236770	T(0.0,11.0)= 0.00000139
D= 89.15	R(0.0,11.5)= 0.00236770	T(0.0,11.5)= 0.00000075
D= 93.02	R(0.0,12.0)= 0.00236770	T(0.0,12.0)= 0.00000041
D= 96.90	R(0.0,12.5)= 0.00236770	T(0.0,12.5)= 0.00000022
D=100.78	R(0.0,13.0)= 0.00236770	T(0.0,13.0)= 0.00000012
D=104.65	R(0.0,13.5)= 0.00236770	T(0.0,13.5)= 0.00000006
D=108.53	R(0.0,14.0)= 0.00236770	T(0.0,14.0)= 0.00000003
D=112.40	R(0.0,14.5)= 0.00236770	T(0.0,14.5)= 0.00000002
D=116.28	R(0.0,15.0)= 0.00236770	T(0.0,15.0)= 0.00000001

D= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
D= 3.88	R(0.5,0.0)= 0.00400140	T(0.5,0.0)= 0.29201449
D= 7.75	R(1.0,0.0)= 0.00463429	T(1.0,0.0)= 0.08527314
D= 11.63	R(1.5,0.0)= 0.00473439	T(1.5,0.0)= 0.02490122
D= 15.50	R(2.0,0.0)= 0.00475023	T(2.0,0.0)= 0.00727159
D= 19.38	R(2.5,0.0)= 0.00475273	T(2.5,0.0)= 0.00212343
D= 23.26	R(3.0,0.0)= 0.00475313	T(3.0,0.0)= 0.00062008
D= 27.13	R(3.5,0.0)= 0.00475319	T(3.5,0.0)= 0.00018107
D= 31.01	R(4.0,0.0)= 0.00475320	T(4.0,0.0)= 0.00005288
D= 34.88	R(4.5,0.0)= 0.00475320	T(4.5,0.0)= 0.00001544
D= 38.76	R(5.0,0.0)= 0.00475320	T(5.0,0.0)= 0.00000451
D= 42.64	R(5.5,0.0)= 0.00475320	T(5.5,0.0)= 0.00000132
D= 46.51	R(6.0,0.0)= 0.00475320	T(6.0,0.0)= 0.00000038
D= 50.39	R(6.5,0.0)= 0.00475320	T(6.5,0.0)= 0.00000011
D= 54.26	R(7.0,0.0)= 0.00475320	T(7.0,0.0)= 0.00000003
D= 58.14	R(7.5,0.0)= 0.00475320	T(7.5,0.0)= 0.00000001
D= 62.02	R(8.0,0.0)= 0.00475320	T(8.0,0.0)= 0.00000000
D= 65.89	R(8.5,0.0)= 0.00475320	T(8.5,0.0)= 0.00000000
D= 69.77	R(9.0,0.0)= 0.00475320	T(9.0,0.0)= 0.00000000
D= 73.64	R(9.5,0.0)= 0.00475320	T(9.5,0.0)= 0.00000000
D= 77.52	R(10.0,0.0)= 0.00475320	T(10.0,0.0)= 0.00000000
D= 81.40	R(10.5,0.0)= 0.00475320	T(10.5,0.0)= 0.00000000
D= 85.27	R(11.0,0.0)= 0.00475320	T(11.0,0.0)= 0.00000000
D= 89.15	R(11.5,0.0)= 0.00475320	T(11.5,0.0)= 0.00000000
D= 93.02	R(12.0,0.0)= 0.00475320	T(12.0,0.0)= 0.00000000
D= 96.90	R(12.5,0.0)= 0.00475320	T(12.5,0.0)= 0.00000000
D=100.78	R(13.0,0.0)= 0.00475320	T(13.0,0.0)= 0.00000000
D=104.65	R(13.5,0.0)= 0.00475320	T(13.5,0.0)= 0.00000000
D=108.53	R(14.0,0.0)= 0.00475320	T(14.0,0.0)= 0.00000000
D=112.40	R(14.5,0.0)= 0.00475320	T(14.5,0.0)= 0.00000000
D=116.28	R(15.0,0.0)= 0.00475320	T(15.0,0.0)= 0.00000000

TABLE 4-A (CONTINUED)

R(0.0, 0.0,15.0)= 0.00236770	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.00128244	T(0.0, 0.5,15.0)= 0.54163895
R(0.0, 1.0,15.0)= 0.00069462	T(0.0, 1.0,15.0)= 0.29337275
R(0.0, 1.5,15.0)= 0.00037623	T(0.0, 1.5,15.0)= 0.15890211
R(0.0, 2.0,15.0)= 0.00020378	T(0.0, 2.0,15.0)= 0.08606757
R(0.0, 2.5,15.0)= 0.00011038	T(0.0, 2.5,15.0)= 0.04661755
R(0.0, 3.0,15.0)= 0.00005978	T(0.0, 3.0,15.0)= 0.02524988
R(0.0, 3.5,15.0)= 0.00003238	T(0.0, 3.5,15.0)= 0.01367622
R(0.0, 4.0,15.0)= 0.00001754	T(0.0, 4.0,15.0)= 0.00740763
R(0.0, 4.5,15.0)= 0.00000950	T(0.0, 4.5,15.0)= 0.00401226
R(0.0, 5.0,15.0)= 0.00000515	T(0.0, 5.0,15.0)= 0.00217320
R(0.0, 5.5,15.0)= 0.00000279	T(0.0, 5.5,15.0)= 0.00117709
R(0.0, 6.0,15.0)= 0.00000151	T(0.0, 6.0,15.0)= 0.00063756
R(0.0, 6.5,15.0)= 0.00000082	T(0.0, 6.5,15.0)= 0.00034533
R(0.0, 7.0,15.0)= 0.00000044	T(0.0, 7.0,15.0)= 0.00018704
R(0.0, 7.5,15.0)= 0.00000024	T(0.0, 7.5,15.0)= 0.00010131
R(0.0, 8.0,15.0)= 0.00000013	T(0.0, 8.0,15.0)= 0.00005487
R(0.0, 8.5,15.0)= 0.00000007	T(0.0, 8.5,15.0)= 0.00002972
R(0.0, 9.0,15.0)= 0.00000004	T(0.0, 9.0,15.0)= 0.00001610
R(0.0, 9.5,15.0)= 0.00000002	T(0.0, 9.5,15.0)= 0.00000872
R(0.0,10.0,15.0)= 0.00000001	T(0.0,10.0,15.0)= 0.00000472
R(0.0,10.5,15.0)= 0.00000001	T(0.0,10.5,15.0)= 0.00000256
R(0.0,11.0,15.0)= 0.00000000	T(0.0,11.0,15.0)= 0.00000139
R(0.0,11.5,15.0)= 0.00000000	T(0.0,11.5,15.0)= 0.00000075
R(0.0,12.0,15.0)= 0.00000000	T(0.0,12.0,15.0)= 0.00000041
R(0.0,12.5,15.0)= 0.00000000	T(0.0,12.5,15.0)= 0.00000022
R(0.0,13.0,15.0)= 0.00000000	T(0.0,13.0,15.0)= 0.00000012
R(0.0,13.5,15.0)= 0.00000000	T(0.0,13.5,15.0)= 0.00000006
R(0.0,14.0,15.0)= 0.00000000	T(0.0,14.0,15.0)= 0.00000003
R(0.0,14.5,15.0)= 0.00000000	T(0.0,14.5,15.0)= 0.00000002
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00000001

0.D.= 0.0	TR= 0.002367698803	IR= 1.000000000000
0.D.= 0.50	TR= 0.001282425746	IR= 1.000009474207
0.D.= 1.00	TR= 0.000694610695	IR= 1.000010972723
0.D.= 1.50	TR= 0.000376228119	IR= 1.000011209740
0.D.= 2.00	TR= 0.000203779796	IR= 1.000011247229
0.D.= 2.50	TR= 0.000110375074	IR= 1.000011253158
0.D.= 3.00	TR= 0.000059783439	IR= 1.000011254096
0.D.= 3.50	TR= 0.000032381039	IR= 1.000011254244
0.D.= 4.00	TR= 0.000017538832	IR= 1.000011254268
0.D.= 4.50	TR= 0.000009499715	IR= 1.000011254272
0.D.= 5.00	TR= 0.000005145416	IR= 1.000011254272
0.D.= 5.50	TR= 0.000002786957	IR= 1.000011254272
0.D.= 6.00	TR= 0.000001509525	IR= 1.000011254272
0.D.= 6.50	TR= 0.000000817617	IR= 1.000011254272
0.D.= 7.00	TR= 0.000000442853	IR= 1.000011254272
0.D.= 7.50	TR= 0.000000239867	IR= 1.000011254272
0.D.= 8.00	TR= 0.000000129921	IR= 1.000011254272
0.D.= 8.50	TR= 0.000000070370	IR= 1.000011254272
0.D.= 9.00	TR= 0.000000038115	IR= 1.000011254272
0.D.= 9.50	TR= 0.000000020645	IR= 1.000011254272
0.D.=10.00	TR= 0.000000011182	IR= 1.000011254272
0.D.=10.50	TR= 0.000000006057	IR= 1.000011254272
0.D.=11.00	TR= 0.000000003280	IR= 1.000011254268
0.D.=11.50	TR= 0.000000001777	IR= 1.000011254244
0.D.=12.00	TR= 0.000000000962	IR= 1.000011254096
0.D.=12.50	TR= 0.000000000521	IR= 1.000011253158
0.D.=13.00	TR= 0.000000000282	IR= 1.000011247229
0.D.=13.50	TR= 0.000000000152	IR= 1.000011209740
0.D.=14.00	TR= 0.000000000081	IR= 1.000010972723
0.D.=14.50	TR= 0.000000000038	IR= 1.000009474207
0.D.=15.00	TR= 0.0	IR= 1.000000000000

TABLE 4-B PACIFIC COASTAL WATER 2

A=0.118100 B=0.000847 D(+)=1.000000 D(-)=1.000000
A(+)=0.118100 A(-)=0.118100 B(+)=0.000847 B(-)=0.000847
S=0.01094000 ALPHA=0.12500000 RHO=0.08480620

D= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
D= 3.88	R(0.0, 0.5)= 0.00214446	T(0.0, 0.5)= 0.63063323
D= 7.75	R(0.0, 1.0)= 0.00299731	T(0.0, 1.0)= 0.39770011
D= 11.63	R(0.0, 1.5)= 0.00333649	T(0.0, 1.5)= 0.25080452
D= 15.50	R(0.0, 2.0)= 0.00347138	T(0.0, 2.0)= 0.15816679
D= 19.38	R(0.0, 2.5)= 0.00352503	T(0.0, 2.5)= 0.09974598
D= 23.26	R(0.0, 3.0)= 0.00354637	T(0.0, 3.0)= 0.06290361
D= 27.13	R(0.0, 3.5)= 0.00355485	T(0.0, 3.5)= 0.03966941
D= 31.01	R(0.0, 4.0)= 0.00355823	T(0.0, 4.0)= 0.02501704
D= 34.88	R(0.0, 4.5)= 0.00355957	T(0.0, 4.5)= 0.01577669
D= 38.76	R(0.0, 5.0)= 0.00356010	T(0.0, 5.0)= 0.00994938
D= 42.64	R(0.0, 5.5)= 0.00356031	T(0.0, 5.5)= 0.00627446
D= 46.51	R(0.0, 6.0)= 0.00356040	T(0.0, 6.0)= 0.00395691
D= 50.39	R(0.0, 6.5)= 0.00356043	T(0.0, 6.5)= 0.00249538
D= 54.26	R(0.0, 7.0)= 0.00356045	T(0.0, 7.0)= 0.00157368
D= 58.14	R(0.0, 7.5)= 0.00356045	T(0.0, 7.5)= 0.00099242
D= 62.02	R(0.0, 8.0)= 0.00356045	T(0.0, 8.0)= 0.00062586
D= 65.89	R(0.0, 8.5)= 0.00356045	T(0.0, 8.5)= 0.00039469
D= 69.77	R(0.0, 9.0)= 0.00356045	T(0.0, 9.0)= 0.00024891
D= 73.64	R(0.0, 9.5)= 0.00356045	T(0.0, 9.5)= 0.00015697
D= 77.52	R(0.0,10.0)= 0.00356045	T(0.0,10.0)= 0.00009899
D= 81.40	R(0.0,10.5)= 0.00356045	T(0.0,10.5)= 0.00006243
D= 85.27	R(0.0,11.0)= 0.00356045	T(0.0,11.0)= 0.00003937
D= 89.15	R(0.0,11.5)= 0.00356045	T(0.0,11.5)= 0.00002483
D= 93.02	R(0.0,12.0)= 0.00356045	T(0.0,12.0)= 0.00001566
D= 96.90	R(0.0,12.5)= 0.00356045	T(0.0,12.5)= 0.00000987
D=100.78	R(0.0,13.0)= 0.00356045	T(0.0,13.0)= 0.00000623
D=104.65	R(0.0,13.5)= 0.00356045	T(0.0,13.5)= 0.00000393
D=108.53	R(0.0,14.0)= 0.00356045	T(0.0,14.0)= 0.00000248
D=112.40	R(0.0,14.5)= 0.00356045	T(0.0,14.5)= 0.00000156
D=116.28	R(0.0,15.0)= 0.00356045	T(0.0,15.0)= 0.00000098

D= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
D= 3.88	R(0.5,0.0)= 0.00214446	T(0.5,0.0)= 0.63063323
D= 7.75	R(1.0,0.0)= 0.00299731	T(1.0,0.0)= 0.39770011
D= 11.63	R(1.5,0.0)= 0.00333649	T(1.5,0.0)= 0.25080452
D= 15.50	R(2.0,0.0)= 0.00347138	T(2.0,0.0)= 0.15816679
D= 19.38	R(2.5,0.0)= 0.00352503	T(2.5,0.0)= 0.09974598
D= 23.26	R(3.0,0.0)= 0.00354637	T(3.0,0.0)= 0.06290361
D= 27.13	R(3.5,0.0)= 0.00355485	T(3.5,0.0)= 0.03966941
D= 31.01	R(4.0,0.0)= 0.00355823	T(4.0,0.0)= 0.02501704
D= 34.88	R(4.5,0.0)= 0.00355957	T(4.5,0.0)= 0.01577669
D= 38.76	R(5.0,0.0)= 0.00356010	T(5.0,0.0)= 0.00994938
D= 42.64	R(5.5,0.0)= 0.00356031	T(5.5,0.0)= 0.00627446
D= 46.51	R(6.0,0.0)= 0.00356040	T(6.0,0.0)= 0.00395691
D= 50.39	R(6.5,0.0)= 0.00356043	T(6.5,0.0)= 0.00249538
D= 54.26	R(7.0,0.0)= 0.00356045	T(7.0,0.0)= 0.00157368
D= 58.14	R(7.5,0.0)= 0.00356045	T(7.5,0.0)= 0.00099242
D= 62.02	R(8.0,0.0)= 0.00356045	T(8.0,0.0)= 0.00062586
D= 65.89	R(8.5,0.0)= 0.00356045	T(8.5,0.0)= 0.00039469
D= 69.77	R(9.0,0.0)= 0.00356045	T(9.0,0.0)= 0.00024891
D= 73.64	R(9.5,0.0)= 0.00356045	T(9.5,0.0)= 0.00015697
D= 77.52	R(10.0,0.0)= 0.00356045	T(10.0,0.0)= 0.00009899
D= 81.40	R(10.5,0.0)= 0.00356045	T(10.5,0.0)= 0.00006243
D= 85.27	R(11.0,0.0)= 0.00356045	T(11.0,0.0)= 0.00003937
D= 89.15	R(11.5,0.0)= 0.00356045	T(11.5,0.0)= 0.00002483
D= 93.02	R(12.0,0.0)= 0.00356045	T(12.0,0.0)= 0.00001566
D= 96.90	R(12.5,0.0)= 0.00356045	T(12.5,0.0)= 0.00000987
D=100.78	R(13.0,0.0)= 0.00356045	T(13.0,0.0)= 0.00000623
D=104.65	R(13.5,0.0)= 0.00356045	T(13.5,0.0)= 0.00000393
D=108.53	R(14.0,0.0)= 0.00356045	T(14.0,0.0)= 0.00000248
D=112.40	R(14.5,0.0)= 0.00356045	T(14.5,0.0)= 0.00000156
D=116.28	R(15.0,0.0)= 0.00356045	T(15.0,0.0)= 0.00000098

TABLE 4-B (CONTINUED)

R(0.0, 0.0,15.0)= 0.00356045	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.00224536	T(0.0, 0.5,15.0)= 0.63063805
R(0.0, 1.0,15.0)= 0.00141601	T(0.0, 1.0,15.0)= 0.39770425
R(0.0, 1.5,15.0)= 0.00089299	T(0.0, 1.5,15.0)= 0.25080750
R(0.0, 2.0,15.0)= 0.00056315	T(0.0, 2.0,15.0)= 0.15816875
R(0.0, 2.5,15.0)= 0.00035515	T(0.0, 2.5,15.0)= 0.09974723
R(0.0, 3.0,15.0)= 0.00022397	T(0.0, 3.0,15.0)= 0.06290440
R(0.0, 3.5,15.0)= 0.00014124	T(0.0, 3.5,15.0)= 0.03966991
R(0.0, 4.0,15.0)= 0.00008907	T(0.0, 4.0,15.0)= 0.02501735
R(0.0, 4.5,15.0)= 0.00005617	T(0.0, 4.5,15.0)= 0.01577689
R(0.0, 5.0,15.0)= 0.00003542	T(0.0, 5.0,15.0)= 0.00994951
R(0.0, 5.5,15.0)= 0.00002234	T(0.0, 5.5,15.0)= 0.00627454
R(0.0, 6.0,15.0)= 0.00001409	T(0.0, 6.0,15.0)= 0.00395696
R(0.0, 6.5,15.0)= 0.00000888	T(0.0, 6.5,15.0)= 0.00249541
R(0.0, 7.0,15.0)= 0.00000560	T(0.0, 7.0,15.0)= 0.00157370
R(0.0, 7.5,15.0)= 0.00000353	T(0.0, 7.5,15.0)= 0.00099244
R(0.0, 8.0,15.0)= 0.00000223	T(0.0, 8.0,15.0)= 0.00062587
R(0.0, 8.5,15.0)= 0.00000141	T(0.0, 8.5,15.0)= 0.00039470
R(0.0, 9.0,15.0)= 0.00000089	T(0.0, 9.0,15.0)= 0.00024891
R(0.0, 9.5,15.0)= 0.00000056	T(0.0, 9.5,15.0)= 0.00015697
R(0.0,10.0,15.0)= 0.00000035	T(0.0,10.0,15.0)= 0.00009899
R(0.0,10.5,15.0)= 0.00000022	T(0.0,10.5,15.0)= 0.00006243
R(0.0,11.0,15.0)= 0.00000014	T(0.0,11.0,15.0)= 0.00003937
R(0.0,11.5,15.0)= 0.00000009	T(0.0,11.5,15.0)= 0.00002483
R(0.0,12.0,15.0)= 0.00000006	T(0.0,12.0,15.0)= 0.00001566
R(0.0,12.5,15.0)= 0.00000003	T(0.0,12.5,15.0)= 0.00000987
R(0.0,13.0,15.0)= 0.00000002	T(0.0,13.0,15.0)= 0.00000623
R(0.0,13.5,15.0)= 0.00000001	T(0.0,13.5,15.0)= 0.00000393
R(0.0,14.0,15.0)= 0.00000001	T(0.0,14.0,15.0)= 0.00000248
R(0.0,14.5,15.0)= 0.00000000	T(0.0,14.5,15.0)= 0.00000156
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00000098

0.D0= 0.0	TR= 0.003560454393	IR= 1.000000000000
0.D0= 0.50	TR= 0.002245340870	IR= 1.000007635300
0.D0= 1.00	TR= 0.001415993087	IR= 1.000010671892
0.D0= 1.50	TR= 0.000892978040	IR= 1.000011879557
0.D0= 2.00	TR= 0.000563145659	IR= 1.000012359851
0.D0= 2.50	TR= 0.000355141012	IR= 1.000012550866
0.D0= 3.00	TR= 0.000223965418	IR= 1.000012626834
0.D0= 3.50	TR= 0.000141241110	IR= 1.000012657046
0.D0= 4.00	TR= 0.000089072017	IR= 1.000012669062
0.D0= 4.50	TR= 0.000056172203	IR= 1.000012673841
0.D0= 5.00	TR= 0.000035424328	IR= 1.000012675741
0.D0= 5.50	TR= 0.000022339929	IR= 1.000012676497
0.D0= 6.00	TR= 0.000014088409	IR= 1.000012676797
0.D0= 6.50	TR= 0.000008884686	IR= 1.000012676915
0.D0= 7.00	TR= 0.000005603020	IR= 1.000012676960
0.D0= 7.50	TR= 0.000003533475	IR= 1.000012676971
0.D0= 8.00	TR= 0.000002228341	IR= 1.000012676960
0.D0= 8.50	TR= 0.000001405271	IR= 1.000012676915
0.D0= 9.00	TR= 0.000000886209	IR= 1.000012676797
0.D0= 9.50	TR= 0.000000558864	IR= 1.000012676497
0.D0=10.00	TR= 0.000000352420	IR= 1.000012675741
0.D0=10.50	TR= 0.000000222216	IR= 1.000012673841
0.D0=11.00	TR= 0.000000140085	IR= 1.000012669062
0.D0=11.50	TR= 0.000000088259	IR= 1.000012657046
0.D0=12.00	TR= 0.000000055527	IR= 1.000012626834
0.D0=12.50	TR= 0.000000034807	IR= 1.000012550866
0.D0=13.00	TR= 0.000000021616	IR= 1.000012359851
0.D0=13.50	TR= 0.000000013102	IR= 1.000011879557
0.D0=14.00	TR= 0.000000007423	IR= 1.000010671892
0.D0=14.50	TR= 0.000000003349	IR= 1.000007635300
0.D0=15.00	TR= 0.0	IR= 1.000000000000

TABLE 5-A PACIFIC COASTAL WATER 3

A=0.103800 B=0.000982 D(+)=2.670000 D(-)=1.330000
A(+)=0.277146 A(-)=0.138054 B(+)=0.002622 B(-)=0.001306
S=0.01420000 ALPHA=0.11800000 RHO=0.12033398

D= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
D= 4.24	R(0.0, 0.5)= 0.00258854	T(0.0, 0.5)= 0.55405556
D= 8.47	R(0.0, 1.0)= 0.00302685	T(0.0, 1.0)= 0.30698170
D= 12.71	R(0.0, 1.5)= 0.00310107	T(0.0, 1.5)= 0.17008759
D= 16.95	R(0.0, 2.0)= 0.00311364	T(0.0, 2.0)= 0.09423950
D= 21.19	R(0.0, 2.5)= 0.00311576	T(0.0, 2.5)= 0.05221476
D= 25.42	R(0.0, 3.0)= 0.00311612	T(0.0, 3.0)= 0.02893035
D= 29.66	R(0.0, 3.5)= 0.00311618	T(0.0, 3.5)= 0.01602928
D= 33.90	R(0.0, 4.0)= 0.00311620	T(0.0, 4.0)= 0.00888126
D= 38.14	R(0.0, 4.5)= 0.00311620	T(0.0, 4.5)= 0.00492079
D= 42.37	R(0.0, 5.0)= 0.00311620	T(0.0, 5.0)= 0.00272643
D= 46.61	R(0.0, 5.5)= 0.00311620	T(0.0, 5.5)= 0.00151062
D= 50.85	R(0.0, 6.0)= 0.00311620	T(0.0, 6.0)= 0.00083698
D= 55.08	R(0.0, 6.5)= 0.00311620	T(0.0, 6.5)= 0.00046374
D= 59.32	R(0.0, 7.0)= 0.00311620	T(0.0, 7.0)= 0.00025694
D= 63.56	R(0.0, 7.5)= 0.00311620	T(0.0, 7.5)= 0.00014236
D= 67.80	R(0.0, 8.0)= 0.00311620	T(0.0, 8.0)= 0.00007888
D= 72.03	R(0.0, 8.5)= 0.00311620	T(0.0, 8.5)= 0.00004370
D= 76.27	R(0.0, 9.0)= 0.00311620	T(0.0, 9.0)= 0.00002421
D= 80.51	R(0.0, 9.5)= 0.00311620	T(0.0, 9.5)= 0.00001342
D= 84.75	R(0.0,10.0)= 0.00311620	T(0.0,10.0)= 0.00000743
D= 88.98	R(0.0,10.5)= 0.00311620	T(0.0,10.5)= 0.00000412
D= 93.22	R(0.0,11.0)= 0.00311620	T(0.0,11.0)= 0.00000228
D= 97.46	R(0.0,11.5)= 0.00311620	T(0.0,11.5)= 0.00000126
D=101.69	R(0.0,12.0)= 0.00311620	T(0.0,12.0)= 0.00000070
D=105.93	R(0.0,12.5)= 0.00311620	T(0.0,12.5)= 0.00000039
D=110.17	R(0.0,13.0)= 0.00311620	T(0.0,13.0)= 0.00000022
D=114.41	R(0.0,13.5)= 0.00311620	T(0.0,13.5)= 0.00000012
D=118.64	R(0.0,14.0)= 0.00311620	T(0.0,14.0)= 0.00000007
D=122.88	R(0.0,14.5)= 0.00311620	T(0.0,14.5)= 0.00000004
D=127.12	R(0.0,15.0)= 0.00311620	T(0.0,15.0)= 0.00000002

D= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
D= 4.24	R(0.5,0.0)= 0.00519653	T(0.5,0.0)= 0.30561200
D= 8.47	R(1.0,0.0)= 0.00607645	T(1.0,0.0)= 0.09339995
D= 12.71	R(1.5,0.0)= 0.00622545	T(1.5,0.0)= 0.02854460
D= 16.95	R(2.0,0.0)= 0.00625068	T(2.0,0.0)= 0.00872371
D= 21.19	R(2.5,0.0)= 0.00625495	T(2.5,0.0)= 0.00266611
D= 25.42	R(3.0,0.0)= 0.00625568	T(3.0,0.0)= 0.00081481
D= 29.66	R(3.5,0.0)= 0.00625580	T(3.5,0.0)= 0.00024902
D= 33.90	R(4.0,0.0)= 0.00625582	T(4.0,0.0)= 0.00007610
D= 38.14	R(4.5,0.0)= 0.00625582	T(4.5,0.0)= 0.00002326
D= 42.37	R(5.0,0.0)= 0.00625582	T(5.0,0.0)= 0.00000711
D= 46.61	R(5.5,0.0)= 0.00625582	T(5.5,0.0)= 0.00000217
D= 50.85	R(6.0,0.0)= 0.00625582	T(6.0,0.0)= 0.00000066
D= 55.08	R(6.5,0.0)= 0.00625582	T(6.5,0.0)= 0.00000020
D= 59.32	R(7.0,0.0)= 0.00625582	T(7.0,0.0)= 0.00000006
D= 63.56	R(7.5,0.0)= 0.00625582	T(7.5,0.0)= 0.00000002
D= 67.80	R(8.0,0.0)= 0.00625582	T(8.0,0.0)= 0.00000001
D= 72.03	R(8.5,0.0)= 0.00625582	T(8.5,0.0)= 0.00000000
D= 76.27	R(9.0,0.0)= 0.00625582	T(9.0,0.0)= 0.00000000
D= 80.51	R(9.5,0.0)= 0.00625582	T(9.5,0.0)= 0.00000000
D= 84.75	R(10.0,0.0)= 0.00625582	T(10.0,0.0)= 0.00000000
D= 88.98	R(10.5,0.0)= 0.00625582	T(10.5,0.0)= 0.00000000
D= 93.22	R(11.0,0.0)= 0.00625582	T(11.0,0.0)= 0.00000000
D= 97.46	R(11.5,0.0)= 0.00625582	T(11.5,0.0)= 0.00000000
D=101.69	R(12.0,0.0)= 0.00625582	T(12.0,0.0)= 0.00000000
D=105.93	R(12.5,0.0)= 0.00625582	T(12.5,0.0)= 0.00000000
D=110.17	R(13.0,0.0)= 0.00625582	T(13.0,0.0)= 0.00000000
D=114.41	R(13.5,0.0)= 0.00625582	T(13.5,0.0)= 0.00000000
D=118.64	R(14.0,0.0)= 0.00625582	T(14.0,0.0)= 0.00000000
D=122.88	R(14.5,0.0)= 0.00625582	T(14.5,0.0)= 0.00000000
D=127.12	R(15.0,0.0)= 0.00625582	T(15.0,0.0)= 0.00000000

TABLE 5-A (CONTINUED)

R(0.0, 0.0,15.0)= 0.00311620	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.00172157	T(0.0, 0.5,15.0)= 0.55406454
R(0.0, 1.0,15.0)= 0.00095[illegible]	T(0.0, 1.0,15.0)= 0.30698751
R(0.0, 1.5,15.0)= 0.00053004	T(0.0, 1.5,15.0)= 0.17009089
R(0.0, 2.0,15.0)= 0.00029267	T(0.0, 2.0,15.0)= 0.09424133
R(0.0, 2.5,15.0)= 0.00016271	T(0.0, 2.5,15.0)= 0.05221578
R(0.0, 3.0,15.0)= 0.00009015	T(0.0, 3.0,15.0)= 0.02893091
R(0.0, 3.5,15.0)= 0.00004985	T(0.0, 3.5,15.0)= 0.01602959
R(0.0, 4.0,15.0)= 0.00002765	T(0.0, 4.0,15.0)= 0.00888143
R(0.0, 4.5,15.0)= 0.00001533	T(0.0, 4.5,15.0)= 0.00492088
R(0.0, 5.0,15.0)= 0.00000850	T(0.0, 5.0,15.0)= 0.00272649
R(0.0, 5.5,15.0)= 0.00000471	T(0.0, 5.5,15.0)= 0.00151065
R(0.0, 6.0,15.0)= 0.00000261	T(0.0, 6.0,15.0)= 0.00083700
R(0.0, 6.5,15.0)= 0.00000145	T(0.0, 6.5,15.0)= 0.00046375
R(0.0, 7.0,15.0)= 0.00000080	T(0.0, 7.0,15.0)= 0.00025695
R(0.0, 7.5,15.0)= 0.00000044	T(0.0, 7.5,15.0)= 0.00014237
R(0.0, 8.0,15.0)= 0.00000025	T(0.0, 8.0,15.0)= 0.00007888
R(0.0, 8.5,15.0)= 0.00000014	T(0.0, 8.5,15.0)= 0.00004370
R(0.0, 9.0,15.0)= 0.00000008	T(0.0, 9.0,15.0)= 0.00002422
R(0.0, 9.5,15.0)= 0.00000004	T(0.0, 9.5,15.0)= 0.00001342
R(0.0,10.0,15.0)= 0.00000002	T(0.0,10.0,15.0)= 0.00000743
R(0.0,10.5,15.0)= 0.00000001	T(0.0,10.5,15.0)= 0.00000412
R(0.0,11.0,15.0)= 0.00000001	T(0.0,11.0,15.0)= 0.00000228
R(0.0,11.5,15.0)= 0.00000000	T(0.0,11.5,15.0)= 0.00000126
R(0.0,12.0,15.0)= 0.00000000	T(0.0,12.0,15.0)= 0.00000070
R(0.0,12.5,15.0)= 0.00000000	T(0.0,12.5,15.0)= 0.00000039
R(0.0,13.0,15.0)= 0.00000000	T(0.0,13.0,15.0)= 0.00000022
R(0.0,13.5,15.0)= 0.00000000	T(0.0,13.5,15.0)= 0.00000012
R(0.0,14.0,15.0)= 0.00000000	T(0.0,14.0,15.0)= 0.00000007
R(0.0,14.5,15.0)= 0.00000000	T(0.0,14.5,15.0)= 0.00000004
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00000002

0.D0= 0.0	TR= 0.003116197106	IR= 1.000000000000
0.D0= 0.50	TR= 0.001726546345	IR= 1.000016193684
0.D0= 1.00	TR= 0.000956615476	IR= 1.000018935785
0.D0= 1.50	TR= 0.000530026464	IR= 1.000019400109
0.D0= 2.00	TR= 0.000293668844	IR= 1.000019478734
0.D0= 2.50	TR= 0.000162711489	IR= 1.000019492048
0.D0= 3.00	TR= 0.000090152666	IR= 1.000019494302
0.D0= 3.50	TR= 0.000049950395	IR= 1.000019494684
0.D0= 4.00	TR= 0.000027675742	IR= 1.000019494748
0.D0= 4.50	TR= 0.000015334147	IR= 1.000019494759
0.D0= 5.00	TR= 0.000008496107	IR= 1.000019494761
0.D0= 5.50	TR= 0.000004707392	IR= 1.000019494761
0.D0= 6.00	TR= 0.000002608199	IR= 1.000019494762
0.D0= 6.50	TR= 0.000001445110	IR= 1.000019494762
0.D0= 7.00	TR= 0.000000800684	IR= 1.000019494762
0.D0= 7.50	TR= 0.000000443631	IR= 1.000019494762
0.D0= 8.00	TR= 0.000000245800	IR= 1.000019494762
0.D0= 8.50	TR= 0.000000136189	IR= 1.000019494762
0.D0= 9.00	TR= 0.000000075458	IR= 1.000019494762
0.D0= 9.50	TR= 0.000000041808	IR= 1.000019494761
0.D0=10.00	TR= 0.000000023165	IR= 1.000019494761
0.D0=10.50	TR= 0.000000012835	IR= 1.000019494759
0.D0=11.00	TR= 0.000000007111	IR= 1.000019494748
0.D0=11.50	TR= 0.000000003940	IR= 1.000019494684
0.D0=12.00	TR= 0.000000002183	IR= 1.000019494302
0.D0=12.50	TR= 0.000000001209	IR= 1.000019492048
0.D0=13.00	TR= 0.000000000670	IR= 1.000019478734
0.D0=13.50	TR= 0.000000000370	IR= 1.000019400109
0.D0=14.00	TR= 0.000000000200	IR= 1.000018935785
0.D0=14.50	TR= 0.000000000095	IR= 1.000016193684
0.D0=15.00	TR= 0.0	IR= 1.000000000000

TABLE 5-B PACIFIC COASTAL WATER 3

A=0.103800 B=0.000982 D(+)=1.000000 D(-)=1.000000
A(+)=0.103800 A(-)=0.103800 B(+)=0.000982 B(-)=0.000982
S=0.01420000 ALPHA=0.11800000 RHO=0.12033898

D= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
D= 4.24	R(0.0, 0.5)= 0.00275774	T(0.0, 0.5)= 0.64147508
D= 8.47	R(0.0, 1.0)= 0.00389254	T(0.0, 1.0)= 0.41149340
D= 12.71	R(0.0, 1.5)= 0.00435950	T(0.0, 1.5)= 0.26396559
D= 16.95	R(0.0, 2.0)= 0.00455166	T(0.0, 2.0)= 0.16932939
D= 21.19	R(0.0, 2.5)= 0.00463073	T(0.0, 2.5)= 0.10862194
D= 25.42	R(0.0, 3.0)= 0.00466327	T(0.0, 3.0)= 0.06967916
D= 29.66	R(0.0, 3.5)= 0.00467666	T(0.0, 3.5)= 0.04469802
D= 33.90	R(0.0, 4.0)= 0.00468217	T(0.0, 4.0)= 0.02867303
D= 38.14	R(0.0, 4.5)= 0.00468444	T(0.0, 4.5)= 0.01839327
D= 42.37	R(0.0, 5.0)= 0.00468537	T(0.0, 5.0)= 0.01179898
D= 46.61	R(0.0, 5.5)= 0.00468575	T(0.0, 5.5)= 0.00756885
D= 50.85	R(0.0, 6.0)= 0.00468591	T(0.0, 6.0)= 0.00485529
D= 55.08	R(0.0, 6.5)= 0.00468598	T(0.0, 6.5)= 0.00311459
D= 59.32	R(0.0, 7.0)= 0.00468600	T(0.0, 7.0)= 0.00199796
D= 63.56	R(0.0, 7.5)= 0.00468601	T(0.0, 7.5)= 0.00128166
D= 67.80	R(0.0, 8.0)= 0.00468602	T(0.0, 8.0)= 0.00082216
D= 72.03	R(0.0, 8.5)= 0.00468602	T(0.0, 8.5)= 0.00052740
D= 76.27	R(0.0, 9.0)= 0.00468602	T(0.0, 9.0)= 0.00033832
D= 80.51	R(0.0, 9.5)= 0.00468602	T(0.0, 9.5)= 0.00021703
D= 84.75	R(0.0,10.0)= 0.00468602	T(0.0,10.0)= 0.00013922
D= 88.98	R(0.0,10.5)= 0.00468602	T(0.0,10.5)= 0.00008931
D= 93.22	R(0.0,11.0)= 0.00468602	T(0.0,11.0)= 0.00005729
D= 97.46	R(0.0,11.5)= 0.00468602	T(0.0,11.5)= 0.00003675
D=101.69	R(0.0,12.0)= 0.00468602	T(0.0,12.0)= 0.00002357
D=105.93	R(0.0,12.5)= 0.00468602	T(0.0,12.5)= 0.00001512
D=110.17	R(0.0,13.0)= 0.00468602	T(0.0,13.0)= 0.00000970
D=114.41	R(0.0,13.5)= 0.00468602	T(0.0,13.5)= 0.00000622
D=118.64	R(0.0,14.0)= 0.00468602	T(0.0,14.0)= 0.00000399
D=122.88	R(0.0,14.5)= 0.00468602	T(0.0,14.5)= 0.00000256
D=127.12	R(0.0,15.0)= 0.00468602	T(0.0,15.0)= 0.00000164

D= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
D= 4.24	R(0.5,0.0)= 0.00275774	T(0.5,0.0)= 0.64147508
D= 8.47	R(1.0,0.0)= 0.00389254	T(1.0,0.0)= 0.41149340
D= 12.71	R(1.5,0.0)= 0.00435950	T(1.5,0.0)= 0.26396559
D= 16.95	R(2.0,0.0)= 0.00455166	T(2.0,0.0)= 0.16932939
D= 21.19	R(2.5,0.0)= 0.00463073	T(2.5,0.0)= 0.10862194
D= 25.42	R(3.0,0.0)= 0.00466327	T(3.0,0.0)= 0.06967916
D= 29.66	R(3.5,0.0)= 0.00467666	T(3.5,0.0)= 0.04469802
D= 33.90	R(4.0,0.0)= 0.00468217	T(4.0,0.0)= 0.02867303
D= 38.14	R(4.5,0.0)= 0.00468444	T(4.5,0.0)= 0.01839327
D= 42.37	R(5.0,0.0)= 0.00468537	T(5.0,0.0)= 0.01179898
D= 46.61	R(5.5,0.0)= 0.00468575	T(5.5,0.0)= 0.00756885
D= 50.85	R(6.0,0.0)= 0.00468591	T(6.0,0.0)= 0.00485529
D= 55.08	R(6.5,0.0)= 0.00468598	T(6.5,0.0)= 0.00311459
D= 59.32	R(7.0,0.0)= 0.00468600	T(7.0,0.0)= 0.00199796
D= 63.56	R(7.5,0.0)= 0.00468601	T(7.5,0.0)= 0.00128166
D= 67.80	R(8.0,0.0)= 0.00468602	T(8.0,0.0)= 0.00082216
D= 72.03	R(8.5,0.0)= 0.00468602	T(8.5,0.0)= 0.00052740
D= 76.27	R(9.0,0.0)= 0.00468602	T(9.0,0.0)= 0.00033832
D= 80.51	R(9.5,0.0)= 0.00468602	T(9.5,0.0)= 0.00021703
D= 84.75	R(10.0,0.0)= 0.00468602	T(10.0,0.0)= 0.00013922
D= 88.98	R(10.5,0.0)= 0.00468602	T(10.5,0.0)= 0.00008931
D= 93.22	R(11.0,0.0)= 0.00468602	T(11.0,0.0)= 0.00005729
D= 97.46	R(11.5,0.0)= 0.00468602	T(11.5,0.0)= 0.00003675
D=101.69	R(12.0,0.0)= 0.00468602	T(12.0,0.0)= 0.00002357
D=105.93	R(12.5,0.0)= 0.00468602	T(12.5,0.0)= 0.00001512
D=110.17	R(13.0,0.0)= 0.00468602	T(13.0,0.0)= 0.00000970
D=114.41	R(13.5,0.0)= 0.00468602	T(13.5,0.0)= 0.00000622
D=118.64	R(14.0,0.0)= 0.00468602	T(14.0,0.0)= 0.00000399
D=122.88	R(14.5,0.0)= 0.00468602	T(14.5,0.0)= 0.00000256
D=127.12	R(15.0,0.0)= 0.00468602	T(15.0,0.0)= 0.00000164

TABLE 5-B (CONTINUED)

R(0.0, 0.0,15.0)= 0.00468602	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.00300601	T(0.0, 0.5,15.0)= 0.64148636
R(0.0, 1.0,15.0)= 0.00192830	T(0.0, 1.0,15.0)= 0.41150091
R(0.0, 1.5,15.0)= 0.00123697	T(0.0, 1.5,15.0)= 0.26397099
R(0.0, 2.0,15.0)= 0.00079350	T(0.0, 2.0,15.0)= 0.16933800
R(0.0, 2.5,15.0)= 0.00050902	T(0.0, 2.5,15.0)= 0.10862430
R(0.0, 3.0,15.0)= 0.00032653	T(0.0, 3.0,15.0)= 0.06968068
R(0.0, 3.5,15.0)= 0.00020946	T(0.0, 3.5,15.0)= 0.04469900
R(0.0, 4.0,15.0)= 0.00013437	T(0.0, 4.0,15.0)= 0.02867366
R(0.0, 4.5,15.0)= 0.00008619	T(0.0, 4.5,15.0)= 0.01839368
R(0.0, 5.0,15.0)= 0.00005529	T(0.0, 5.0,15.0)= 0.01179924
R(0.0, 5.5,15.0)= 0.00003547	T(0.0, 5.5,15.0)= 0.00756902
R(0.0, 6.0,15.0)= 0.00002275	T(0.0, 6.0,15.0)= 0.00485540
R(0.0, 6.5,15.0)= 0.00001460	T(0.0, 6.5,15.0)= 0.00311466
R(0.0, 7.0,15.0)= 0.00000936	T(0.0, 7.0,15.0)= 0.00199800
R(0.0, 7.5,15.0)= 0.00000601	T(0.0, 7.5,15.0)= 0.00128168
R(0.0, 8.0,15.0)= 0.00000385	T(0.0, 8.0,15.0)= 0.00082218
R(0.0, 8.5,15.0)= 0.00000247	T(0.0, 8.5,15.0)= 0.00052741
R(0.0, 9.0,15.0)= 0.00000159	T(0.0, 9.0,15.0)= 0.00033833
R(0.0, 9.5,15.0)= 0.00000102	T(0.0, 9.5,15.0)= 0.00021703
R(0.0,10.0,15.0)= 0.00000065	T(0.0,10.0,15.0)= 0.00013922
R(0.0,10.5,15.0)= 0.00000042	T(0.0,10.5,15.0)= 0.00008931
R(0.0,11.0,15.0)= 0.00000027	T(0.0,11.0,15.0)= 0.00005729
R(0.0,11.5,15.0)= 0.00000017	T(0.0,11.5,15.0)= 0.00003675
R(0.0,12.0,15.0)= 0.00000011	T(0.0,12.0,15.0)= 0.00002357
R(0.0,12.5,15.0)= 0.00000007	T(0.0,12.5,15.0)= 0.00001512
R(0.0,13.0,15.0)= 0.00000004	T(0.0,13.0,15.0)= 0.00000970
R(0.0,13.5,15.0)= 0.00000003	T(0.0,13.5,15.0)= 0.00000622
R(0.0,14.0,15.0)= 0.00000002	T(0.0,14.0,15.0)= 0.00000399
R(0.0,14.5,15.0)= 0.00000001	T(0.0,14.5,15.0)= 0.00000256
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00000164

0.D0= 0.0	TR= 0.004686022234	IR= 1.000000000000
0.D0= 0.50	TR= 0.003005966465	IR= 1.000012923020
0.D0= 1.00	TR= 0.001928267229	IR= 1.000018240855
0.D0= 1.50	TR= 0.001236948643	IR= 1.000020429149
0.D0= 2.00	TR= 0.000793481263	IR= 1.000021329633
0.D0= 2.50	TR= 0.000509004842	IR= 1.000021700184
0.D0= 3.00	TR= 0.000326518089	IR= 1.000021852666
0.D0= 3.50	TR= 0.000209455909	IR= 1.000021915412
0.D0= 4.00	TR= 0.000134362478	IR= 1.000021941232
0.D0= 4.50	TR= 0.000086191293	IR= 1.000021951857
0.D0= 5.00	TR= 0.000055290280	IR= 1.000021956229
0.D0= 5.50	TR= 0.000035467794	IR= 1.000021958028
0.D0= 6.00	TR= 0.000022751998	IR= 1.000021958766
0.D0= 6.50	TR= 0.000014595026	IR= 1.000021959067
0.D0= 7.00	TR= 0.000009362463	IR= 1.000021959184
0.D0= 7.50	TR= 0.000006005858	IR= 1.000021959214
0.D0= 8.00	TR= 0.000003852649	IR= 1.000021959184
0.D0= 8.50	TR= 0.000002471396	IR= 1.000021959067
0.D0= 9.00	TR= 0.000001585338	IR= 1.000021958766
0.D0= 9.50	TR= 0.000001016933	IR= 1.000021958028
0.D0=10.00	TR= 0.000000652292	IR= 1.000021956229
0.D0=10.50	TR= 0.000000418351	IR= 1.000021951857
0.D0=11.00	TR= 0.000000268236	IR= 1.000021941232
0.D0=11.50	TR= 0.000000171866	IR= 1.000021915412
0.D0=12.00	TR= 0.000000109934	IR= 1.000021852666
0.D0=12.50	TR= 0.000000070029	IR= 1.000021700184
0.D0=13.00	TR= 0.000000044155	IR= 1.000021329633
0.D0=13.50	TR= 0.000000027129	IR= 1.000020429149
0.D0=14.00	TR= 0.000000015539	IR= 1.000018240855
0.D0=14.50	TR= 0.000000007062	IR= 1.000012923020
0.D0=15.00	TR= 0.0	IR= 1.000000000000

TABLE 6-A PACIFIC COASTAL WATER 4

A=0.099000 B=0.000984 D(+)=2.670000 D(-)=1.330000
A(+)=0.264330 A(-)=0.131670 B(+)=0.002627 B(-)=0.001309
S=0.01200000 ALPHA=0.11100000 RHO=0.10810811

D0= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
D0= 4.50	R(0.0, 0.5)= 0.00273226	T(0.0, 0.5)= 0.54937036
D0= 9.01	R(0.0, 1.0)= 0.00318324	T(0.0, 1.0)= 0.30181231
D0= 13.51	R(0.0, 1.5)= 0.00325768	T(0.0, 1.5)= 0.16580963
D0= 18.02	R(0.0, 2.0)= 0.00326996	T(0.0, 2.0)= 0.09109252
D0= 22.52	R(0.0, 2.5)= 0.00327199	T(0.0, 2.5)= 0.05004443
D0= 27.03	R(0.0, 3.0)= 0.00327233	T(0.0, 3.0)= 0.02749342
D0= 31.53	R(0.0, 3.5)= 0.00327238	T(0.0, 3.5)= 0.01510434
D0= 36.04	R(0.0, 4.0)= 0.00327239	T(0.0, 4.0)= 0.00829803
D0= 40.54	R(0.0, 4.5)= 0.00327239	T(0.0, 4.5)= 0.00455877
D0= 45.05	R(0.0, 5.0)= 0.00327239	T(0.0, 5.0)= 0.00250450
D0= 49.55	R(0.0, 5.5)= 0.00327239	T(0.0, 5.5)= 0.00137592
D0= 54.05	R(0.0, 6.0)= 0.00327239	T(0.0, 6.0)= 0.00075590
D0= 58.56	R(0.0, 6.5)= 0.00327239	T(0.0, 6.5)= 0.00041528
D0= 63.06	R(0.0, 7.0)= 0.00327239	T(0.0, 7.0)= 0.00022815
D0= 67.57	R(0.0, 7.5)= 0.00327239	T(0.0, 7.5)= 0.00012534
D0= 72.07	R(0.0, 8.0)= 0.00327239	T(0.0, 8.0)= 0.00006886
D0= 76.58	R(0.0, 8.5)= 0.00327239	T(0.0, 8.5)= 0.00003783
D0= 81.08	R(0.0, 9.0)= 0.00327239	T(0.0, 9.0)= 0.00002078
D0= 85.59	R(0.0, 9.5)= 0.00327239	T(0.0, 9.5)= 0.00001142
D0= 90.09	R(0.0,10.0)= 0.00327239	T(0.0,10.0)= 0.00000627
D0= 94.59	R(0.0,10.5)= 0.00327239	T(0.0,10.5)= 0.00000345
D0= 99.10	R(0.0,11.0)= 0.00327239	T(0.0,11.0)= 0.00000189
D0=103.60	R(0.0,11.5)= 0.00327239	T(0.0,11.5)= 0.00000104
D0=108.11	R(0.0,12.0)= 0.00327239	T(0.0,12.0)= 0.00000057
D0=112.61	R(0.0,12.5)= 0.00327239	T(0.0,12.5)= 0.00000031
D0=117.12	R(0.0,13.0)= 0.00327239	T(0.0,13.0)= 0.00000017
D0=121.62	R(0.0,13.5)= 0.00327239	T(0.0,13.5)= 0.00000009
D0=126.13	R(0.0,14.0)= 0.00327239	T(0.0,14.0)= 0.00000005
D0=130.63	R(0.0,14.5)= 0.00327239	T(0.0,14.5)= 0.00000003
D0=135.14	R(0.0,15.0)= 0.00327239	T(0.0,15.0)= 0.00000002

D0= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
D0= 4.50	R(0.5,0.0)= 0.00548506	T(0.5,0.0)= 0.30044532
D0= 9.01	R(1.0,0.0)= 0.00639041	T(1.0,0.0)= 0.09026875
D0= 13.51	R(1.5,0.0)= 0.00653985	T(1.5,0.0)= 0.02712130
D0= 18.02	R(2.0,0.0)= 0.00656452	T(2.0,0.0)= 0.00814861
D0= 22.52	R(2.5,0.0)= 0.00656859	T(2.5,0.0)= 0.00244826
D0= 27.03	R(3.0,0.0)= 0.00656926	T(3.0,0.0)= 0.00073558
D0= 31.53	R(3.5,0.0)= 0.00656937	T(3.5,0.0)= 0.00022101
D0= 36.04	R(4.0,0.0)= 0.00656939	T(4.0,0.0)= 0.00006640
D0= 40.54	R(4.5,0.0)= 0.00656939	T(4.5,0.0)= 0.00001995
D0= 45.05	R(5.0,0.0)= 0.00656939	T(5.0,0.0)= 0.00000599
D0= 49.55	R(5.5,0.0)= 0.00656939	T(5.5,0.0)= 0.00000180
D0= 54.05	R(6.0,0.0)= 0.00656939	T(6.0,0.0)= 0.00000054
D0= 58.56	R(6.5,0.0)= 0.00656939	T(6.5,0.0)= 0.00000016
D0= 63.06	R(7.0,0.0)= 0.00656939	T(7.0,0.0)= 0.00000005
D0= 67.57	R(7.5,0.0)= 0.00656939	T(7.5,0.0)= 0.00000001
D0= 72.07	R(8.0,0.0)= 0.00656939	T(8.0,0.0)= 0.00000000
D0= 76.58	R(8.5,0.0)= 0.00656939	T(8.5,0.0)= 0.00000000
D0= 81.08	R(9.0,0.0)= 0.00656939	T(9.0,0.0)= 0.00000000
D0= 85.59	R(9.5,0.0)= 0.00656939	T(9.5,0.0)= 0.00000000
D0= 90.09	R(10.0,0.0)= 0.00656939	T(10.0,0.0)= 0.00000000
D0= 94.59	R(10.5,0.0)= 0.00656939	T(10.5,0.0)= 0.00000000
D0= 99.10	R(11.0,0.0)= 0.00656939	T(11.0,0.0)= 0.00000000
D0=103.60	R(11.5,0.0)= 0.00656939	T(11.5,0.0)= 0.00000000
D0=108.11	R(12.0,0.0)= 0.00656939	T(12.0,0.0)= 0.00000000
D0=112.61	R(12.5,0.0)= 0.00656939	T(12.5,0.0)= 0.00000000
D0=117.12	R(13.0,0.0)= 0.00656939	T(13.0,0.0)= 0.00000000
D0=121.62	R(13.5,0.0)= 0.00656939	T(13.5,0.0)= 0.00000000
D0=126.13	R(14.0,0.0)= 0.00656939	T(14.0,0.0)= 0.00000000
D0=130.63	R(14.5,0.0)= 0.00656939	T(14.5,0.0)= 0.00000000
D0=135.14	R(15.0,0.0)= 0.00656939	T(15.0,0.0)= 0.00000000

TABLE 6-A (CONTINUED)

R(0.0, 0.0,15.0)=	0.00327239	T(0.0, 0.0,15.0)=	1.00000000
R(0.0, 0.5,15.0)=	0.00179779	T(0.0, 0.5,15.0)=	0.54938022
R(0.0, 1.0,15.0)=	0.00098767	T(0.0, 1.0,15.0)=	0.30181862
R(0.0, 1.5,15.0)=	0.00054261	T(0.0, 1.5,15.0)=	0.16581318
R(0.0, 2.0,15.0)=	0.00029810	T(0.0, 2.0,15.0)=	0.09109448
R(0.0, 2.5,15.0)=	0.00016377	T(0.0, 2.5,15.0)=	0.05004551
R(0.0, 3.0,15.0)=	0.00008997	T(0.0, 3.0,15.0)=	0.02749401
R(0.0, 3.5,15.0)=	0.00004943	T(0.0, 3.5,15.0)=	0.01510467
R(0.0, 4.0,15.0)=	0.00002715	T(0.0, 4.0,15.0)=	0.00829820
R(0.0, 4.5,15.0)=	0.00001492	T(0.0, 4.5,15.0)=	0.00455887
R(0.0, 5.0,15.0)=	0.00000820	T(0.0, 5.0,15.0)=	0.00250455
R(0.0, 5.5,15.0)=	0.00000450	T(0.0, 5.5,15.0)=	0.00137595
R(0.0, 6.0,15.0)=	0.00000247	T(0.0, 6.0,15.0)=	0.00075592
R(0.0, 6.5,15.0)=	0.00000136	T(0.0, 6.5,15.0)=	0.00041529
R(0.0, 7.0,15.0)=	0.00000075	T(0.0, 7.0,15.0)=	0.00022815
R(0.0, 7.5,15.0)=	0.00000041	T(0.0, 7.5,15.0)=	0.00012534
R(0.0, 8.0,15.0)=	0.00000023	T(0.0, 8.0,15.0)=	0.00006886
R(0.0, 8.5,15.0)=	0.00000012	T(0.0, 8.5,15.0)=	0.00003783
R(0.0, 9.0,15.0)=	0.00000007	T(0.0, 9.0,15.0)=	0.00002078
R(0.0, 9.5,15.0)=	0.00000004	T(0.0, 9.5,15.0)=	0.00001142
R(0.0,10.0,15.0)=	0.00000002	T(0.0,10.0,15.0)=	0.00000627
R(0.0,10.5,15.0)=	0.00000001	T(0.0,10.5,15.0)=	0.00000345
R(0.0,11.0,15.0)=	0.00000001	T(0.0,11.0,15.0)=	0.00000189
R(0.0,11.5,15.0)=	0.00000000	T(0.0,11.5,15.0)=	0.00000104
R(0.0,12.0,15.0)=	0.00000000	T(0.0,12.0,15.0)=	0.00000057
R(0.0,12.5,15.0)=	0.00000000	T(0.0,12.5,15.0)=	0.00000031
R(0.0,13.0,15.0)=	0.00000000	T(0.0,13.0,15.0)=	0.00000017
R(0.0,13.5,15.0)=	0.00000000	T(0.0,13.5,15.0)=	0.00000009
R(0.0,14.0,15.0)=	0.00000000	T(0.0,14.0,15.0)=	0.00000005
R(0.0,14.5,15.0)=	0.00000000	T(0.0,14.5,15.0)=	0.00000003
R(0.0,15.0,15.0)=	0.0	T(0.0,15.0,15.0)=	0.00000002

0.D0= 0.0	TR=	0.003272393919	IR= 1.000000000000
0.D0= 0.50	TR=	0.001797756210	IR= 1.000017949589
0.D0= 1.00	TR=	0.000987648769	IR= 1.000020912378
0.D0= 1.50	TR=	0.000542594429	IR= 1.000021401421
0.D0= 2.00	TR=	0.000298090621	IR= 1.000021482143
0.D0= 2.50	TR=	0.000163765087	IR= 1.000021495467
0.D0= 3.00	TR=	0.000089969299	IR= 1.000021497667
0.D0= 3.50	TR=	0.000049427353	IR= 1.000021498030
0.D0= 4.00	TR=	0.000027154410	IR= 1.000021498090
0.D0= 4.50	TR=	0.000014918096	IR= 1.000021498100
0.D0= 5.00	TR=	0.000008195707	IR= 1.000021498101
0.D0= 5.50	TR=	0.000004502559	IR= 1.000021498102
0.D0= 6.00	TR=	0.000002473617	IR= 1.000021498102
0.D0= 6.50	TR=	0.000001358956	IR= 1.000021498102
0.D0= 7.00	TR=	0.000000746584	IR= 1.000021498102
0.D0= 7.50	TR=	0.000000410158	IR= 1.000021498102
0.D0= 8.00	TR=	0.000000225333	IR= 1.000021498102
0.D0= 8.50	TR=	0.000000123793	IR= 1.000021498102
0.D0= 9.00	TR=	0.000000068010	IR= 1.000021498102
0.D0= 9.50	TR=	0.000000037363	IR= 1.000021498102
0.D0=10.00	TR=	0.000000020527	IR= 1.000021498101
0.D0=10.50	TR=	0.000000011277	IR= 1.000021498100
0.D0=11.00	TR=	0.000000006195	IR= 1.000021498090
0.D0=11.50	TR=	0.000000003404	IR= 1.000021498030
0.D0=12.00	TR=	0.000000001870	IR= 1.000021497667
0.D0=12.50	TR=	0.000000001027	IR= 1.000021495467
0.D0=13.00	TR=	0.000000000564	IR= 1.000021482143
0.D0=13.50	TR=	0.000000000309	IR= 1.000021401421
0.D0=14.00	TR=	0.000000000166	IR= 1.000020912378
0.D0=14.50	TR=	0.000000000078	IR= 1.000017949589
0.D0=15.00	TR=	0.0	IR= 1.000000000000

TABLE 6-B PACIFIC COASTAL WATER 4

A=0.099000 B=0.000984 D(+)=1.000000 D(-)=1.000000
A(+)=0.099000 A(-)=0.099000 B(+)=0.000984 B(-)=0.000984
S=0.01200000 ALPHA=0.11100000 RHO=0.10810811

Do= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
Do= 4.50	R(0.0, 0.5)= 0.00292167	T(0.0, 0.5)= 0.63739167
Do= 9.01	R(0.0, 1.0)= 0.00410866	T(0.0, 1.0)= 0.40627161
Do= 13.51	R(0.0, 1.5)= 0.00459091	T(0.0, 1.5)= 0.25895725
Do= 18.02	R(0.0, 2.0)= 0.00478684	T(0.0, 2.0)= 0.16505941
Do= 22.52	R(0.0, 2.5)= 0.00486644	T(0.0, 2.5)= 0.10520896
Do= 27.03	R(0.0, 3.0)= 0.00489878	T(0.0, 3.0)= 0.06706027
Do= 31.53	R(0.0, 3.5)= 0.00491192	T(0.0, 3.5)= 0.04274427
Do= 36.04	R(0.0, 4.0)= 0.00491725	T(0.0, 4.0)= 0.02724523
Do= 40.54	R(0.0, 4.5)= 0.00491942	T(0.0, 4.5)= 0.01736613
Do= 45.05	R(0.0, 5.0)= 0.00492030	T(0.0, 5.0)= 0.01106919
Do= 49.55	R(0.0, 5.5)= 0.00492066	T(0.0, 5.5)= 0.00705551
Do= 54.05	R(0.0, 6.0)= 0.00492081	T(0.0, 6.0)= 0.00449719
Do= 58.56	R(0.0, 6.5)= 0.00492087	T(0.0, 6.5)= 0.00286651
Do= 63.06	R(0.0, 7.0)= 0.00492089	T(0.0, 7.0)= 0.00182712
Do= 67.57	R(0.0, 7.5)= 0.00492090	T(0.0, 7.5)= 0.00116461
Do= 72.07	R(0.0, 8.0)= 0.00492090	T(0.0, 8.0)= 0.00074232
Do= 76.58	R(0.0, 8.5)= 0.00492091	T(0.0, 8.5)= 0.00047316
Do= 81.08	R(0.0, 9.0)= 0.00492091	T(0.0, 9.0)= 0.00030159
Do= 85.59	R(0.0, 9.5)= 0.00492091	T(0.0, 9.5)= 0.00019223
Do= 90.09	R(0.0,10.0)= 0.00492091	T(0.0,10.0)= 0.00012253
Do= 94.59	R(0.0,10.5)= 0.00492091	T(0.0,10.5)= 0.00007810
Do= 99.10	R(0.0,11.0)= 0.00492091	T(0.0,11.0)= 0.00004978
Do=103.60	R(0.0,11.5)= 0.00492091	T(0.0,11.5)= 0.00003173
Do=108.11	R(0.0,12.0)= 0.00492091	T(0.0,12.0)= 0.00002023
Do=112.61	R(0.0,12.5)= 0.00492091	T(0.0,12.5)= 0.00001289
Do=117.12	R(0.0,13.0)= 0.00492091	T(0.0,13.0)= 0.00000822
Do=121.62	R(0.0,13.5)= 0.00492091	T(0.0,13.5)= 0.00000524
Do=126.13	R(0.0,14.0)= 0.00492091	T(0.0,14.0)= 0.00000334
Do=130.63	R(0.0,14.5)= 0.00492091	T(0.0,14.5)= 0.00000213
Do=135.14	R(0.0,15.0)= 0.00492091	T(0.0,15.0)= 0.00000136

Do= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
Do= 4.50	R(0.5,0.0)= 0.00292167	T(0.5,0.0)= 0.63739167
Do= 9.01	R(1.0,0.0)= 0.00410866	T(1.0,0.0)= 0.40627161
Do= 13.51	R(1.5,0.0)= 0.00459091	T(1.5,0.0)= 0.25895725
Do= 18.02	R(2.0,0.0)= 0.00478684	T(2.0,0.0)= 0.16505941
Do= 22.52	R(2.5,0.0)= 0.00486644	T(2.5,0.0)= 0.10520896
Do= 27.03	R(3.0,0.0)= 0.00489878	T(3.0,0.0)= 0.06706027
Do= 31.53	R(3.5,0.0)= 0.00491192	T(3.5,0.0)= 0.04274427
Do= 36.04	R(4.0,0.0)= 0.00491725	T(4.0,0.0)= 0.02724523
Do= 40.54	R(4.5,0.0)= 0.00491942	T(4.5,0.0)= 0.01736613
Do= 45.05	R(5.0,0.0)= 0.00492030	T(5.0,0.0)= 0.01106919
Do= 49.55	R(5.5,0.0)= 0.00492066	T(5.5,0.0)= 0.00705551
Do= 54.05	R(6.0,0.0)= 0.00492081	T(6.0,0.0)= 0.00449719
Do= 58.56	R(6.5,0.0)= 0.00492087	T(6.5,0.0)= 0.00286651
Do= 63.06	R(7.0,0.0)= 0.00492089	T(7.0,0.0)= 0.00182712
Do= 67.57	R(7.5,0.0)= 0.00492090	T(7.5,0.0)= 0.00116461
Do= 72.07	R(8.0,0.0)= 0.00492090	T(8.0,0.0)= 0.00074232
Do= 76.58	R(8.5,0.0)= 0.00492091	T(8.5,0.0)= 0.00047316
Do= 81.08	R(9.0,0.0)= 0.00492091	T(9.0,0.0)= 0.00030159
Do= 85.59	R(9.5,0.0)= 0.00492091	T(9.5,0.0)= 0.00019223
Do= 90.09	R(10.0,0.0)= 0.00492091	T(10.0,0.0)= 0.00012253
Do= 94.59	R(10.5,0.0)= 0.00492091	T(10.5,0.0)= 0.00007810
Do= 99.10	R(11.0,0.0)= 0.00492091	T(11.0,0.0)= 0.00004978
Do=103.60	R(11.5,0.0)= 0.00492091	T(11.5,0.0)= 0.00003173
Do=108.11	R(12.0,0.0)= 0.00492091	T(12.0,0.0)= 0.00002023
Do=112.61	R(12.5,0.0)= 0.00492091	T(12.5,0.0)= 0.00001289
Do=117.12	R(13.0,0.0)= 0.00492091	T(13.0,0.0)= 0.00000822
Do=121.62	R(13.5,0.0)= 0.00492091	T(13.5,0.0)= 0.00000524
Do=126.13	R(14.0,0.0)= 0.00492091	T(14.0,0.0)= 0.00000334
Do=130.63	R(14.5,0.0)= 0.00492091	T(14.5,0.0)= 0.00000213
Do=135.14	R(15.0,0.0)= 0.00492091	T(15.0,0.0)= 0.00000136

TABLE 6-B (CONTINUED)

R(0.0, 0.0,15.0)= 0.00492091	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.00313659	T(0.0, 0.5,15.0)= 0.63740084
R(0.0, 1.0,15.0)= 0.00199927	T(0.0, 1.0,15.0)= 0.40627982
R(0.0, 1.5,15.0)= 0.00127433	T(0.0, 1.5,15.0)= 0.25896310
R(0.0, 2.0,15.0)= 0.00081226	T(0.0, 2.0,15.0)= 0.16506339
R(0.0, 2.5,15.0)= 0.00051774	T(0.0, 2.5,15.0)= 0.10521148
R(0.0, 3.0,15.0)= 0.00033001	T(0.0, 3.0,15.0)= 0.06706189
R(0.0, 3.5,15.0)= 0.00021035	T(0.0, 3.5,15.0)= 0.04274530
R(0.0, 4.0,15.0)= 0.00013407	T(0.0, 4.0,15.0)= 0.02724589
R(0.0, 4.5,15.0)= 0.00008546	T(0.0, 4.5,15.0)= 0.01736655
R(0.0, 5.0,15.0)= 0.00005447	T(0.0, 5.0,15.0)= 0.01106946
R(0.0, 5.5,15.0)= 0.00003472	T(0.0, 5.5,15.0)= 0.00705568
R(0.0, 6.0,15.0)= 0.00002213	T(0.0, 6.0,15.0)= 0.00449730
R(0.0, 6.5,15.0)= 0.00001411	T(0.0, 6.5,15.0)= 0.00286658
R(0.0, 7.0,15.0)= 0.00000899	T(0.0, 7.0,15.0)= 0.00182716
R(0.0, 7.5,15.0)= 0.00000573	T(0.0, 7.5,15.0)= 0.00116463
R(0.0, 8.0,15.0)= 0.00000365	T(0.0, 8.0,15.0)= 0.00074234
R(0.0, 8.5,15.0)= 0.00000233	T(0.0, 8.5,15.0)= 0.00047317
R(0.0, 9.0,15.0)= 0.00000148	T(0.0, 9.0,15.0)= 0.00030160
R(0.0, 9.5,15.0)= 0.00000095	T(0.0, 9.5,15.0)= 0.00019224
R(0.0,10.0,15.0)= 0.00000060	T(0.0,10.0,15.0)= 0.00012253
R(0.0,10.5,15.0)= 0.00000038	T(0.0,10.5,15.0)= 0.00007810
R(0.0,11.0,15.0)= 0.00000024	T(0.0,11.0,15.0)= 0.00004978
R(0.0,11.5,15.0)= 0.00000016	T(0.0,11.5,15.0)= 0.00003173
R(0.0,12.0,15.0)= 0.00000010	T(0.0,12.0,15.0)= 0.00002023
R(0.0,12.5,15.0)= 0.00000006	T(0.0,12.5,15.0)= 0.00001289
R(0.0,13.0,15.0)= 0.00000004	T(0.0,13.0,15.0)= 0.00000822
R(0.0,13.5,15.0)= 0.00000002	T(0.0,13.5,15.0)= 0.00000524
R(0.0,14.0,15.0)= 0.00000001	T(0.0,14.0,15.0)= 0.00000334
R(0.0,14.5,15.0)= 0.00000001	T(0.0,14.5,15.0)= 0.00000213
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00000136

0.D0= 0.0	TR= 0.004920906484	IR= 1.000000000000
0.D0= 0.50	TR= 0.003136544807	IR= 1.000014377473
0.D0= 1.00	TR= 0.001999224602	IR= 1.000020218750
0.D0= 1.50	TR= 0.001274304407	IR= 1.000022591943
0.D0= 2.00	TR= 0.000812241910	IR= 1.000023556123
0.D0= 2.50	TR= 0.000517723469	IR= 1.000023947850
0.D0= 3.00	TR= 0.000329997319	IR= 1.000024107001
0.D0= 3.50	TR= 0.000210340553	IR= 1.000024171661
0.D0= 4.00	TR= 0.000134071240	IR= 1.000024197931
0.D0= 4.50	TR= 0.000085457119	IR= 1.000024208603
0.D0= 5.00	TR= 0.000054470439	IR= 1.000024212939
0.D0= 5.50	TR= 0.000034719502	IR= 1.000024214701
0.D0= 6.00	TR= 0.000022130238	IR= 1.000024215415
0.D0= 6.50	TR= 0.000014105831	IR= 1.000024215703
0.D0= 7.00	TR= 0.000008991065	IR= 1.000024215813
0.D0= 7.50	TR= 0.000005730908	IR= 1.000024215841
0.D0= 8.00	TR= 0.000003652878	IR= 1.000024215813
0.D0= 8.50	TR= 0.000002328336	IR= 1.000024215703
0.D0= 9.00	TR= 0.000001484066	IR= 1.000024215415
0.D0= 9.50	TR= 0.000000945917	IR= 1.000024214701
0.D0=10.00	TR= 0.000000602884	IR= 1.000024212939
0.D0=10.50	TR= 0.000000384210	IR= 1.000024208603
0.D0=11.00	TR= 0.000000244788	IR= 1.000024197931
0.D0=11.50	TR= 0.000000155859	IR= 1.000024171661
0.D0=12.00	TR= 0.000000099079	IR= 1.000024107001
0.D0=12.50	TR= 0.000000062736	IR= 1.000023947850
0.D0=13.00	TR= 0.000000039334	IR= 1.000023556123
0.D0=13.50	TR= 0.000000024045	IR= 1.000022591943
0.D0=14.00	TR= 0.000000013717	IR= 1.000020218750
0.D0=14.50	TR= 0.000000006217	IR= 1.000014377473
0.D0=15.00	TR= 0.0	IR= 1.000000000000

TABLE 7-A LAKE PEND OREILLE 1

A=0.324000 B=0.025600 D(+)=2.670000 D(-)=1.330000
A(+)=0.865080 A(-)=0.430920 B(+)=0.068352 B(-)=0.034048
S=0.58500000 ALPHA=0.90900000 RHO=0.64356436

D= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
D= 0.55	R(0.0, 0.5)= 0.01306751	T(0.0, 0.5)= 0.77454373
D= 1.10	R(0.0, 1.0)= 0.01912822	T(0.0, 1.0)= 0.60012371
D= 1.65	R(0.0, 1.5)= 0.02194060	T(0.0, 1.5)= 0.46505542
D= 2.20	R(0.0, 2.0)= 0.02324594	T(0.0, 2.0)= 0.36041321
D= 2.75	R(0.0, 2.5)= 0.02385187	T(0.0, 2.5)= 0.27932613
D= 3.30	R(0.0, 3.0)= 0.02413315	T(0.0, 3.0)= 0.21648576
D= 3.85	R(0.0, 3.5)= 0.02426373	T(0.0, 3.5)= 0.16778391
D= 4.40	R(0.0, 4.0)= 0.02432435	T(0.0, 4.0)= 0.13003875
D= 4.95	R(0.0, 4.5)= 0.02435249	T(0.0, 4.5)= 0.10078501
D= 5.50	R(0.0, 5.0)= 0.02436555	T(0.0, 5.0)= 0.07811230
D= 6.05	R(0.0, 5.5)= 0.02437162	T(0.0, 5.5)= 0.06054009
D= 6.60	R(0.0, 6.0)= 0.02437443	T(0.0, 6.0)= 0.04692094
D= 7.15	R(0.0, 6.5)= 0.02437574	T(0.0, 6.5)= 0.03636557
D= 7.70	R(0.0, 7.0)= 0.02437635	T(0.0, 7.0)= 0.02818475
D= 8.25	R(0.0, 7.5)= 0.02437663	T(0.0, 7.5)= 0.02184429
D= 8.80	R(0.0, 8.0)= 0.02437676	T(0.0, 8.0)= 0.01693019
D= 9.35	R(0.0, 8.5)= 0.02437682	T(0.0, 8.5)= 0.01312156
D= 9.90	R(0.0, 9.0)= 0.02437685	T(0.0, 9.0)= 0.01016973
D= 10.45	R(0.0, 9.5)= 0.02437686	T(0.0, 9.5)= 0.00788194
D= 11.00	R(0.0,10.0)= 0.02437687	T(0.0,10.0)= 0.00610881
D= 11.55	R(0.0,10.5)= 0.02437687	T(0.0,10.5)= 0.00473457
D= 12.10	R(0.0,11.0)= 0.02437687	T(0.0,11.0)= 0.00366948
D= 12.65	R(0.0,11.5)= 0.02437687	T(0.0,11.5)= 0.00284399
D= 13.20	R(0.0,12.0)= 0.02437687	T(0.0,12.0)= 0.00220420
D= 13.75	R(0.0,12.5)= 0.02437687	T(0.0,12.5)= 0.00170834
D= 14.30	R(0.0,13.0)= 0.02437687	T(0.0,13.0)= 0.00132403
D= 14.85	R(0.0,13.5)= 0.02437687	T(0.0,13.5)= 0.00102618
D= 15.40	R(0.0,14.0)= 0.02437687	T(0.0,14.0)= 0.00079533
D= 15.95	R(0.0,14.5)= 0.02437687	T(0.0,14.5)= 0.00061641
D= 16.50	R(0.0,15.0)= 0.02437687	T(0.0,15.0)= 0.00047774

D= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
D= 0.55	R(0.5,0.0)= 0.02623326	T(0.5,0.0)= 0.59859973
D= 1.10	R(1.0,0.0)= 0.03840027	T(1.0,0.0)= 0.35844452
D= 1.65	R(1.5,0.0)= 0.04404617	T(1.5,0.0)= 0.21467251
D= 2.20	R(2.0,0.0)= 0.04666666	T(2.0,0.0)= 0.12857692
D= 2.75	R(2.5,0.0)= 0.04788308	T(2.5,0.0)= 0.07701307
D= 3.30	R(3.0,0.0)= 0.04844775	T(3.0,0.0)= 0.04612887
D= 3.85	R(3.5,0.0)= 0.04870989	T(3.5,0.0)= 0.02763022
D= 4.40	R(4.0,0.0)= 0.04883158	T(4.0,0.0)= 0.01654998
D= 4.95	R(4.5,0.0)= 0.04888808	T(4.5,0.0)= 0.00991314
D= 5.50	R(5.0,0.0)= 0.04891430	T(5.0,0.0)= 0.00593779
D= 6.05	R(5.5,0.0)= 0.04892648	T(5.5,0.0)= 0.00355664
D= 6.60	R(6.0,0.0)= 0.04893213	T(6.0,0.0)= 0.00213036
D= 7.15	R(6.5,0.0)= 0.04893475	T(6.5,0.0)= 0.00127605
D= 7.70	R(7.0,0.0)= 0.04893597	T(7.0,0.0)= 0.00076433
D= 8.25	R(7.5,0.0)= 0.04893654	T(7.5,0.0)= 0.00045782
D= 8.80	R(8.0,0.0)= 0.04893680	T(8.0,0.0)= 0.00027423
D= 9.35	R(8.5,0.0)= 0.04893692	T(,0.0)= 0.00016426
D= 9.90	R(9.0,0.0)= 0.04893698	T(0.0)= 0.00009839
D= 10.45	R(9.5,0.0)= 0.04893700	T(0.0)= 0.00005893
D= 11.00	R(10.0,0.0)= 0.04893702	T(0.0)= 0.00003530
D= 11.55	R(10.5,0.0)= 0.04893702	T(0.0)= 0.00002114
D= 12.10	R(11.0,0.0)= 0.04893703	T(,0.0)= 0.00001266
D= 12.65	R(11.5,0.0)= 0.04893703	T(11 ,0.0)= 0.00000759
D= 13.20	R(12.0,0.0)= 0.04893703	T(12.0,0.0)= 0.00000454
D= 13.75	R(12.5,0.0)= 0.04893703	T(12.5,0.0)= 0.00000272
D= 14.30	R(13.0,0.0)= 0.04893703	T(13.0,0.0)= 0.00000163
D= 14.85	R(13.5,0.0)= 0.04893703	T(13.5,0.0)= 0.00000098
D= 15.40	R(14.0,0.0)= 0.04893703	T(14.0,0.0)= 0.00000058
D= 15.95	R(14.5,0.0)= 0.04893703	T(14.5,0.0)= 0.00000035
D= 16.50	R(15.0,0.0)= 0.04893703	T(15.0,0.0)= 0.00000021

TABLE 7-A (CONTINUED)

R(0.0, 0.0,15.0)= 0.02437687	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.01889303	T(0.0, 0.5,15.0)= 0.77503936
R(0.0, 1.0,15.0)= 0.01464285	T(0.0, 1.0,15.0)= 0.60068600
R(0.0, 1.5,15.0)= 0.01134878	T(0.0, 1.5,15.0)= 0.46555529
R(0.0, 2.0,15.0)= 0.00879575	T(0.0, 2.0,15.0)= 0.36082367
R(0.0, 2.5,15.0)= 0.00681705	T(0.0, 2.5,15.0)= 0.27965255
R(0.0, 3.0,15.0)= 0.00528349	T(0.0, 3.0,15.0)= 0.21674173
R(0.0, 3.5,15.0)= 0.00409491	T(0.0, 3.5,15.0)= 0.16798337
R(0.0, 4.0,15.0)= 0.00317372	T(0.0, 4.0,15.0)= 0.13019372
R(0.0, 4.5,15.0)= 0.00245975	T(0.0, 4.5,15.0)= 0.10090526
R(0.0, 5.0,15.0)= 0.00190641	T(0.0, 5.0,15.0)= 0.07820555
R(0.0, 5.5,15.0)= 0.00147754	T(0.0, 5.5,15.0)= 0.06061238
R(0.0, 6.0,15.0)= 0.00114515	T(0.0, 6.0,15.0)= 0.04697698
R(0.0, 6.5,15.0)= 0.00088754	T(0.0, 6.5,15.0)= 0.03640901
R(0.0, 7.0,15.0)= 0.00068787	T(0.0, 7.0,15.0)= 0.02821841
R(0.0, 7.5,15.0)= 0.00053313	T(0.0, 7.5,15.0)= 0.02187038
R(0.0, 8.0,15.0)= 0.00041319	T(0.0, 8.0,15.0)= 0.01695041
R(0.0, 8.5,15.0)= 0.00032023	T(0.0, 8.5,15.0)= 0.01313723
R(0.0, 9.0,15.0)= 0.00024818	T(0.0, 9.0,15.0)= 0.01018187
R(0.0, 9.5,15.0)= 0.00019232	T(0.0, 9.5,15.0)= 0.00789135
R(0.0,10.0,15.0)= 0.00014902	T(0.0,10.0,15.0)= 0.00611610
R(0.0,10.5,15.0)= 0.00011544	T(0.0,10.5,15.0)= 0.00474022
R(0.0,11.0,15.0)= 0.00008936	T(0.0,11.0,15.0)= 0.00367385
R(0.0,11.5,15.0)= 0.00006909	T(0.0,11.5,15.0)= 0.00284737
R(0.0,12.0,15.0)= 0.00005326	T(0.0,12.0,15.0)= 0.00220681
R(0.0,12.5,15.0)= 0.00004079	T(0.0,12.5,15.0)= 0.00171034
R(0.0,13.0,15.0)= 0.00003081	T(0.0,13.0,15.0)= 0.00132554
R(0.0,13.5,15.0)= 0.00002254	T(0.0,13.5,15.0)= 0.00102728
R(0.0,14.0,15.0)= 0.00001523	T(0.0,14.0,15.0)= 0.00079607
R(0.0,14.5,15.0)= 0.00000806	T(0.0,14.5,15.0)= 0.00061681
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00047774

0.D.= 0.0	TR= 0.024376871376	IR= 1.000000000000
0.D.= 0.50	TR= 0.018880952865	IR= 1.000639894095
0.D.= 1.00	TR= 0.014629138561	IR= 1.000936955473
0.D.= 1.50	TR= 0.011336596188	IR= 1.001074861828
0.D.= 2.00	TR= 0.008785746323	IR= 1.001138882814
0.D.= 2.50	TR= 0.006809097008	IR= 1.001168603609
0.D.= 3.00	TR= 0.005277245400	IR= 1.001182401044
0.D.= 3.50	TR= 0.004090046659	IR= 1.001188806288
0.D.= 4.00	TR= 0.003169937632	IR= 1.001191779805
0.D.= 4.50	TR= 0.002456822900	IR= 1.001193160165
0.D.= 5.00	TR= 0.001904132997	IR= 1.001193800869
0.D.= 5.50	TR= 0.001475777205	IR= 1.001194098072
0.D.= 6.00	TR= 0.001143784642	IR= 1.001194235541
0.D.= 6.50	TR= 0.000886477030	IR= 1.001194298275
0.D.= 7.00	TR= 0.000687052854	IR= 1.001194325062
0.D.= 7.50	TR= 0.000532490137	IR= 1.001194332465
0.D.= 8.00	TR= 0.000412696041	IR= 1.001194325062
0.D.= 8.50	TR= 0.000319847711	IR= 1.001194298275
0.D.= 9.00	TR= 0.000247881271	IR= 1.001194235541
0.D.= 9.50	TR= 0.000192095549	IR= 1.001194098072
0.D.=10.00	TR= 0.000148844562	IR= 1.001193800869
0.D.=10.50	TR= 0.000115298541	IR= 1.001193160165
0.D.=11.00	TR= 0.000089257644	IR= 1.001191779805
0.D.=11.50	TR= 0.000069005789	IR= 1.001188806288
0.D.=12.00	TR= 0.000053194382	IR= 1.001182401044
0.D.=12.50	TR= 0.000040747214	IR= 1.001168603609
0.D.=13.00	TR= 0.000030778425	IR= 1.001138882814
0.D.=13.50	TR= 0.000022514977	IR= 1.001074861829
0.D.=14.00	TR= 0.000015213229	IR= 1.000936955473
0.D.=14.50	TR= 0.000008054957	IR= 1.000639894095
0.D.=15.00	TR= 0.0	IR= 1.000000000000

TABLE 7-B LAKE PEND OREILLE 1

A=0.324000 B=0.025600 D(+)=1.000000 D(-)=1.000000
A(+)=0.324000 A(-)=0.324000 B(+)=0.025600 B(-)=0.025600
S=0.58500000 ALPHA=0.90900000 RHO=0.64356436

Do= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
Do= 0.55	R(0.0, 0.5)= 0.01169038	T(0.0, 0.5)= 0.82513220
Do= 1.10	R(0.0, 1.0)= 0.01965078	T(0.0, 1.0)= 0.68093621
Do= 1.65	R(0.0, 1.5)= 0.02507256	T(0.0, 1.5)= 0.56199150
Do= 2.20	R(0.0, 2.0)= 0.02876586	T(0.0, 2.0)= 0.46385324
Do= 2.75	R(0.0, 2.5)= 0.03128201	T(0.0, 2.5)= 0.38286900
Do= 3.30	R(0.0, 3.0)= 0.03299631	T(0.0, 3.0)= 0.31603311
Do= 3.85	R(0.0, 3.5)= 0.03416436	T(0.0, 3.5)= 0.26086973
Do= 4.40	R(0.0, 4.0)= 0.03496025	T(0.0, 4.0)= 0.21533802
Do= 4.95	R(0.0, 4.5)= 0.03550256	T(0.0, 4.5)= 0.17775498
Do= 5.50	R(0.0, 5.0)= 0.03587209	T(0.0, 5.0)= 0.14673226
Do= 6.05	R(0.0, 5.5)= 0.03612389	T(0.0, 5.5)= 0.12112431
Do= 6.60	R(0.0, 6.0)= 0.03629548	T(0.0, 6.0)= 0.09998579
Do= 7.15	R(0.0, 6.5)= 0.03641240	T(0.0, 6.5)= 0.08253652
Do= 7.70	R(0.0, 7.0)= 0.03649207	T(0.0, 7.0)= 0.06813254
Do= 8.25	R(0.0, 7.5)= 0.03654636	T(0.0, 7.5)= 0.05624234
Do= 8.80	R(0.0, 8.0)= 0.03658335	T(0.0, 8.0)= 0.04642721
Do= 9.35	R(0.0, 8.5)= 0.03660856	T(0.0, 8.5)= 0.03832497
Do= 9.90	R(0.0, 9.0)= 0.03662574	T(0.0, 9.0)= 0.03163671
Do= 10.45	R(0.0, 9.5)= 0.03663745	T(0.0, 9.5)= 0.02611565
Do= 11.00	R(0.0,10.0)= 0.03664542	T(0.0,10.0)= 0.02155810
Do= 11.55	R(0.0,10.5)= 0.03665086	T(0.0,10.5)= 0.01779590
Do= 12.10	R(0.0,11.0)= 0.03665456	T(0.0,11.0)= 0.01469027
Do= 12.65	R(0.0,11.5)= 0.03665709	T(0.0,11.5)= 0.01212661
Do= 13.20	R(0.0,12.0)= 0.03665881	T(0.0,12.0)= 0.01001035
Do= 13.75	R(0.0,12.5)= 0.03665998	T(0.0,12.5)= 0.00826340
Do= 14.30	R(0.0,13.0)= 0.03666078	T(0.0,13.0)= 0.00682132
Do= 14.85	R(0.0,13.5)= 0.03666132	T(0.0,13.5)= 0.00563090
Do= 15.40	R(0.0,14.0)= 0.03666169	T(0.0,14.0)= 0.00464823
Do= 15.95	R(0.0,14.5)= 0.03666195	T(0.0,14.5)= 0.00383705
Do= 16.50	R(0.0,15.0)= 0.03666212	T(0.0,15.0)= 0.00316743

Do= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
Do= 0.55	R(0.5,0.0)= 0.01169038	T(0.5,0.0)= 0.82513220
Do= 1.10	R(1.0,0.0)= 0.01965078	T(1.0,0.0)= 0.68093621
Do= 1.65	R(1.5,0.0)= 0.02507256	T(1.5,0.0)= 0.56199150
Do= 2.20	R(2.0,0.0)= 0.02876586	T(2.0,0.0)= 0.46385324
Do= 2.75	R(2.5,0.0)= 0.03128201	T(2.5,0.0)= 0.38286900
Do= 3.30	R(3.0,0.0)= 0.03299631	T(3.0,0.0)= 0.31603311
Do= 3.85	R(3.5,0.0)= 0.03416436	T(3.5,0.0)= 0.26086973
Do= 4.40	R(4.0,0.0)= 0.03496025	T(4.0,0.0)= 0.21533802
Do= 4.95	R(4.5,0.0)= 0.03550256	T(4.5,0.0)= 0.17775498
Do= 5.50	R(5.0,0.0)= 0.03587209	T(5.0,0.0)= 0.14673226
Do= 6.05	R(5.5,0.0)= 0.03612389	T(5.5,0.0)= 0.12112431
Do= 6.60	R(6.0,0.0)= 0.03629548	T(6.0,0.0)= 0.09998579
Do= 7.15	R(6.5,0.0)= 0.03641240	T(6.5,0.0)= 0.08253652
Do= 7.70	R(7.0,0.0)= 0.03649207	T(7.0,0.0)= 0.06813254
Do= 8.25	R(7.5,0.0)= 0.03654636	T(7.5,0.0)= 0.05624234
Do= 8.80	R(8.0,0.0)= 0.03658335	T(8.0,0.0)= 0.04642721
Do= 9.35	R(8.5,0.0)= 0.03660856	T(8.5,0.0)= 0.03832497
Do= 9.90	R(9.0,0.0)= 0.03662574	T(9.0,0.0)= 0.03163671
Do= 10.45	R(9.5,0.0)= 0.03663745	T(9.5,0.0)= 0.02611565
Do= 11.00	R(10.0,0.0)= 0.03664542	T(10.0,0.0)= 0.02155810
Do= 11.55	R(10.5,0.0)= 0.03665086	T(10.5,0.0)= 0.01779590
Do= 12.10	R(11.0,0.0)= 0.03665456	T(11.0,0.0)= 0.01469027
Do= 12.65	R(11.5,0.0)= 0.03665709	T(11.5,0.0)= 0.01212661
Do= 13.20	R(12.0,0.0)= 0.03665881	T(12.0,0.0)= 0.01001035
Do= 13.75	R(12.5,0.0)= 0.03665998	T(12.5,0.0)= 0.00826340
Do= 14.30	R(13.0,0.0)= 0.03666078	T(13.0,0.0)= 0.00682132
Do= 14.85	R(13.5,0.0)= 0.03666132	T(13.5,0.0)= 0.00563090
Do= 15.40	R(14.0,0.0)= 0.03666169	T(14.0,0.0)= 0.00464823
Do= 15.95	R(14.5,0.0)= 0.03666195	T(14.5,0.0)= 0.00383705
Do= 16.50	R(15.0,0.0)= 0.03666212	T(15.0,0.0)= 0.00316743

TABLE 7-B (CONTINUED)

R(0.0, 0.0,15.0)= 0.03666212	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.03026392	T(0.0, 0.5,15.0)= 0.82548600
R(0.0, 1.0,15.0)= 0.02498227	T(0.0, 1.0,15.0)= 0.68142713
R(0.0, 1.5,15.0)= 0.02062231	T(0.0, 1.5,15.0)= 0.56250855
R(0.0, 2.0,15.0)= 0.01702317	T(0.0, 2.0,15.0)= 0.46434293
R(0.0, 2.5,15.0)= 0.01405208	T(0.0, 2.5,15.0)= 0.38330858
R(0.0, 3.0,15.0)= 0.01159943	T(0.0, 3.0,15.0)= 0.31641585
R(0.0, 3.5,15.0)= 0.00957472	T(0.0, 3.5,15.0)= 0.26119684
R(0.0, 4.0,15.0)= 0.00790325	T(0.0, 4.0,15.0)= 0.21561432
R(0.0, 4.5,15.0)= 0.00652336	T(0.0, 4.5,15.0)= 0.17798658
R(0.0, 5.0,15.0)= 0.00538414	T(0.0, 5.0,15.0)= 0.14692540
R(0.0, 5.5,15.0)= 0.00444357	T(0.0, 5.5,15.0)= 0.12128482
R(0.0, 6.0,15.0)= 0.00366693	T(0.0, 6.0,15.0)= 0.10011888
R(0.0, 6.5,15.0)= 0.00302558	T(0.0, 6.5,15.0)= 0.08264668
R(0.0, 7.0,15.0)= 0.00249585	T(0.0, 7.0,15.0)= 0.06822362
R(0.0, 7.5,15.0)= 0.00205820	T(0.0, 7.5,15.0)= 0.05631756
R(0.0, 8.0,15.0)= 0.00169649	T(0.0, 8.0,15.0)= 0.04648927
R(0.0, 8.5,15.0)= 0.00139737	T(0.0, 8.5,15.0)= 0.03837613
R(0.0, 9.0,15.0)= 0.00114980	T(0.0, 9.0,15.0)= 0.03167882
R(0.0, 9.5,15.0)= 0.00094465	T(0.0, 9.5,15.0)= 0.02615026
R(0.0,10.0,15.0)= 0.00077435	T(0.0,10.0,15.0)= 0.02158647
R(0.0,10.5,15.0)= 0.00063262	T(0.0,10.5,15.0)= 0.01781909
R(0.0,11.0,15.0)= 0.00051423	T(0.0,11.0,15.0)= 0.01470912
R(0.0,11.5,15.0)= 0.00041482	T(0.0,11.5,15.0)= 0.01214181
R(0.0,12.0,15.0)= 0.00033070	T(0.0,12.0,15.0)= 0.01002247
R(0.0,12.5,15.0)= 0.00025879	T(0.0,12.5,15.0)= 0.00827289
R(0.0,13.0,15.0)= 0.00019643	T(0.0,13.0,15.0)= 0.00682852
R(0.0,13.5,15.0)= 0.00014131	T(0.0,13.5,15.0)= 0.00563609
R(0.0,14.0,15.0)= 0.00009141	T(0.0,14.0,15.0)= 0.00465158
R(0.0,14.5,15.0)= 0.00004488	T(0.0,14.5,15.0)= 0.00383870
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00316743

0.D0= 0.0	TR= 0.036662117280	IR= 1.000000000000
0.D0= 0.50	TR= 0.030250951477	IR= 1.000428775854
0.D0= 1.00	TR= 0.024964273900	IR= 1.000720950383
0.D0= 1.50	TR= 0.020603351046	IR= 1.000920038735
0.D0= 2.00	TR= 0.017005220425	IR= 1.001055692226
0.D0= 2.50	TR= 0.014035969385	IR= 1.001148114472
0.D0= 3.00	TR= 0.011585396845	IR= 1.001211070421
0.D0= 3.50	TR= 0.009562724241	IR= 1.001253936446
0.D0= 4.00	TR= 0.007893120901	IR= 1.001283096821
0.D0= 4.50	TR= 0.006514872737	IR= 1.001302894557
0.D0= 5.00	TR= 0.005377065750	IR= 1.001316278240
0.D0= 5.50	TR= 0.004437685331	IR= 1.001325241175
0.D0= 6.00	TR= 0.003662053652	IR= 1.001331118261
0.D0= 6.50	TR= 0.003021543229	IR= 1.001334784805
0.D0= 7.00	TR= 0.002492516782	IR= 1.001336786884
0.D0= 7.50	TR= 0.002055452941	IR= 1.001337422679
0.D0= 8.00	TR= 0.001694224778	IR= 1.001336786884
0.D0= 8.50	TR= 0.001395504119	IR= 1.001334784805
0.D0= 9.00	TR= 0.001148269422	IR= 1.001331118261
0.D0= 9.50	TR= 0.000943398924	IR= 1.001325241175
0.D0=10.00	TR= 0.000773333972	IR= 1.001316278240
0.D0=10.50	TR= 0.000631800081	IR= 1.001302894557
0.D0=11.00	TR= 0.000513575375	IR= 1.001283096821
0.D0=11.50	TR= 0.000414297877	IR= 1.001253936446
0.D0=12.00	TR= 0.000330304495	IR= 1.001211070421
0.D0=12.50	TR= 0.000258495745	IR= 1.001148114472
0.D0=13.00	TR= 0.000196221172	IR= 1.001055692226
0.D0=13.50	TR= 0.000141181168	IR= 1.000920038735
0.D0=14.00	TR= 0.000091341416	IR= 1.000720950383
0.D0=14.50	TR= 0.000044856586	IR= 1.000428775854
0.D0=15.00	TR= 0.0	IR= 1.000000000000

TABLE 8-A LAKE PEND OREILLE 2

A=0.331000 B=0.009760 D(+)=2.670000 D(-)=1.330000
A(+)=0.883770 A(-)=0.440230 B(+)=0.026059 B(-)=0.012981
S=0.25800000 ALPHA=0.58900000 RHO=0.43803056

D= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
D= 0.85	R(0.0, 0.5)= 0.00652953	T(0.0, 0.5)= 0.68069347
D= 1.70	R(0.0, 1.0)= 0.00858296	T(0.0, 1.0)= 0.46338327
D= 2.55	R(0.0, 1.5)= 0.00922880	T(0.0, 1.5)= 0.31545746
D= 3.40	R(0.0, 2.0)= 0.00943194	T(0.0, 2.0)= 0.21475581
D= 4.24	R(0.0, 2.5)= 0.00949583	T(0.0, 2.5)= 0.14620095
D= 5.09	R(0.0, 3.0)= 0.00951593	T(0.0, 3.0)= 0.09953042
D= 5.94	R(0.0, 3.5)= 0.00952225	T(0.0, 3.5)= 0.06775816
D= 6.79	R(0.0, 4.0)= 0.00952424	T(0.0, 4.0)= 0.04612830
D= 7.64	R(0.0, 4.5)= 0.00952487	T(0.0, 4.5)= 0.03140315
D= 8.49	R(0.0, 5.0)= 0.00952506	T(0.0, 5.0)= 0.02137859
D= 9.34	R(0.0, 5.5)= 0.00952512	T(0.0, 5.5)= 0.01455408
D= 10.19	R(0.0, 6.0)= 0.00952514	T(0.0, 6.0)= 0.00990811
D= 11.04	R(0.0, 6.5)= 0.00952515	T(0.0, 6.5)= 0.00674523
D= 11.88	R(0.0, 7.0)= 0.00952515	T(0.0, 7.0)= 0.00459200
D= 12.73	R(0.0, 7.5)= 0.00952515	T(0.0, 7.5)= 0.00312614
D= 13.58	R(0.0, 8.0)= 0.00952515	T(0.0, 8.0)= 0.00212821
D= 14.43	R(0.0, 8.5)= 0.00952515	T(0.0, 8.5)= 0.00144884
D= 15.28	R(0.0, 9.0)= 0.00952515	T(0.0, 9.0)= 0.00098624
D= 16.13	R(0.0, 9.5)= 0.00952515	T(0.0, 9.5)= 0.00067148
D= 16.98	R(0.0,10.0)= 0.00952515	T(0.0,10.0)= 0.00045713
D= 17.83	R(0.0,10.5)= 0.00952515	T(0.0,10.5)= 0.00031120
D= 18.68	R(0.0,11.0)= 0.00952515	T(0.0,11.0)= 0.00021186
D= 19.52	R(0.0,11.5)= 0.00952515	T(0.0,11.5)= 0.00014423
D= 20.37	R(0.0,12.0)= 0.00952515	T(0.0,12.0)= 0.00009819
D= 21.22	R(0.0,12.5)= 0.00952515	T(0.0,12.5)= 0.00006684
D= 22.07	R(0.0,13.0)= 0.00952515	T(0.0,13.0)= 0.00004551
D= 22.92	R(0.0,13.5)= 0.00952515	T(0.0,13.5)= 0.00003098
D= 23.77	R(0.0,14.0)= 0.00952515	T(0.0,14.0)= 0.00002109
D= 24.62	R(0.0,14.5)= 0.00952515	T(0.0,14.5)= 0.00001436
D= 25.47	R(0.0,15.0)= 0.00952515	T(0.0,15.0)= 0.00000977

D= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
D= 0.85	R(0.5,0.0)= 0.01310815	T(0.5,0.0)= 0.46196557
D= 1.70	R(1.0,0.0)= 0.01723045	T(1.0,0.0)= 0.21343045
D= 2.55	R(1.5,0.0)= 0.01852700	T(1.5,0.0)= 0.09860862
D= 3.40	R(2.0,0.0)= 0.01893480	T(2.0,0.0)= 0.04555930
D= 4.24	R(2.5,0.0)= 0.01906307	T(2.5,0.0)= 0.02104943
D= 5.09	R(3.0,0.0)= 0.01910341	T(3.0,0.0)= 0.00972532
D= 5.94	R(3.5,0.0)= 0.01911610	T(3.5,0.0)= 0.00449332
D= 6.79	R(4.0,0.0)= 0.01912009	T(4.0,0.0)= 0.00207602
D= 7.64	R(4.5,0.0)= 0.01912135	T(4.5,0.0)= 0.00095917
D= 8.49	R(5.0,0.0)= 0.01912174	T(5.0,0.0)= 0.00044316
D= 9.34	R(5.5,0.0)= 0.01912187	T(5.5,0.0)= 0.00020475
D= 10.19	R(6.0,0.0)= 0.01912191	T(6.0,0.0)= 0.00009460
D= 11.04	R(6.5,0.0)= 0.01912192	T(6.5,0.0)= 0.00004371
D= 11.88	R(7.0,0.0)= 0.01912192	T(7.0,0.0)= 0.00002019
D= 12.73	R(7.5,0.0)= 0.01912192	T(7.5,0.0)= 0.00000933
D= 13.58	R(8.0,0.0)= 0.01912192	T(8.0,0.0)= 0.00000431
D= 14.43	R(8.5,0.0)= 0.01912192	T(8.5,0.0)= 0.00000199
D= 15.28	R(9.0,0.0)= 0.01912192	T(9.0,0.0)= 0.00000092
D= 16.13	R(9.5,0.0)= 0.01912192	T(9.5,0.0)= 0.00000043
D= 16.98	R(10.0,0.0)= 0.01912192	T(10.0,0.0)= 0.00000020
D= 17.83	R(10.5,0.0)= 0.01912192	T(10.5,0.0)= 0.00000009
D= 18.68	R(11.0,0.0)= 0.01912192	T(11.0,0.0)= 0.00000004
D= 19.52	R(11.5,0.0)= 0.01912192	T(11.5,0.0)= 0.00000002
D= 20.37	R(12.0,0.0)= 0.01912192	T(12.0,0.0)= 0.00000001
D= 21.22	R(12.5,0.0)= 0.01912192	T(12.5,0.0)= 0.00000000
D= 22.07	R(13.0,0.0)= 0.01912192	T(13.0,0.0)= 0.00000000
D= 22.92	R(13.5,0.0)= 0.01912192	T(13.5,0.0)= 0.00000000
D= 23.77	R(14.0,0.0)= 0.01912192	T(14.0,0.0)= 0.00000000
D= 24.62	R(14.5,0.0)= 0.01912192	T(14.5,0.0)= 0.00000000
D= 25.47	R(15.0,0.0)= 0.01912192	T(15.0,0.0)= 0.00000000

TABLE 8-A (CONTINUED)

R(0.0, 0.0,15.0)=	0.00952515	T(0.0, 0.0,15.0)=	1.00000000
R(0.0, 0.5,15.0)=	0.00648452	T(0.0, 0.5,15.0)=	0.68077847
R(0.0, 1.0,15.0)=	0.00441452	T(0.0, 1.0,15.0)=	0.46345933
R(0.0, 1.5,15.0)=	0.00300531	T(0.0, 1.5,15.0)=	0.31551314
R(0.0, 2.0,15.0)=	0.00204595	T(0.0, 2.0,15.0)=	0.21479455
R(0.0, 2.5,15.0)=	0.00139284	T(0.0, 2.5,15.0)=	0.14622751
R(0.0, 3.0,15.0)=	0.00094822	T(0.0, 3.0,15.0)=	0.09954854
R(0.0, 3.5,15.0)=	0.00064552	T(0.0, 3.5,15.0)=	0.06777050
R(0.0, 4.0,15.0)=	0.00043946	T(0.0, 4.0,15.0)=	0.04612670
R(0.0, 4.5,15.0)=	0.00029917	T(0.0, 4.5,15.0)=	0.03140887
R(0.0, 5.0,15.0)=	0.00020367	T(0.0, 5.0,15.0)=	0.02138248
R(0.0, 5.5,15.0)=	0.00013866	T(0.0, 5.5,15.0)=	0.01455673
R(0.0, 6.0,15.0)=	0.00009439	T(0.0, 6.0,15.0)=	0.00990991
R(0.0, 6.5,15.0)=	0.00006426	T(0.0, 6.5,15.0)=	0.00674645
R(0.0, 7.0,15.0)=	0.00004375	T(0.0, 7.0,15.0)=	0.00459284
R(0.0, 7.5,15.0)=	0.00002978	T(0.0, 7.5,15.0)=	0.00312671
R(0.0, 8.0,15.0)=	0.00002028	T(0.0, 8.0,15.0)=	0.00212860
R(0.0, 8.5,15.0)=	0.00001380	T(0.0, 8.5,15.0)=	0.00144910
R(0.0, 9.0,15.0)=	0.00000940	T(0.0, 9.0,15.0)=	0.00098652
R(0.0, 9.5,15.0)=	0.00000640	T(0.0, 9.5,15.0)=	0.00067160
R(0.0,10.0,15.0)=	0.00000435	T(0.0,10.0,15.0)=	0.00045721
R(0.0,10.5,15.0)=	0.00000296	T(0.0,10.5,15.0)=	0.00031126
R(0.0,11.0,15.0)=	0.00000202	T(0.0,11.0,15.0)=	0.00021190
R(0.0,11.5,15.0)=	0.00000137	T(0.0,11.5,15.0)=	0.00014426
R(0.0,12.0,15.0)=	0.00000093	T(0.0,12.0,15.0)=	0.00009821
R(0.0,12.5,15.0)=	0.00000063	T(0.0,12.5,15.0)=	0.00006686
R(0.0,13.0,15.0)=	0.00000043	T(0.0,13.0,15.0)=	0.00004551
R(0.0,13.5,15.0)=	0.00000029	T(0.0,13.5,15.0)=	0.00003099
R(0.0,14.0,15.0)=	0.00000018	T(0.0,14.0,15.0)=	0.00002109
R(0.0,14.5,15.0)=	0.00000009	T(0.0,14.5,15.0)=	0.00001436
R(0.0,15.0,15.0)=	0.0	T(0.0,15.0,15.0)=	0.00000977

0.D.= 0.0	TR= 0.009525152830	IR= 1.000000000000
0.D.= 0.50	TR= 0.006483709369	IR= 1.000124872731
0.D.= 1.00	TR= 0.004413796431	IR= 1.000164149637
0.D.= 1.50	TR= 0.003004780484	IR= 1.000176503617
0.D.= 2.00	TR= 0.002045581925	IR= 1.000180389382
0.D.= 2.50	TR= 0.001392586439	IR= 1.000181611594
0.D.= 3.00	TR= 0.000948042507	IR= 1.000181996022
0.D.= 3.50	TR= 0.000645406853	IR= 1.000182116939
0.D.= 4.00	TR= 0.000439379076	IR= 1.000182154971
0.D.= 4.50	TR= 0.000299119813	IR= 1.000182166934
0.D.= 5.00	TR= 0.000203634329	IR= 1.000182170696
0.D.= 5.50	TR= 0.000138629868	IR= 1.000182171880
0.D.= 6.00	TR= 0.000094376230	IR= 1.000182172252
0.D.= 6.50	TR= 0.000064249305	IR= 1.000182172369
0.D.= 7.00	TR= 0.000043739544	IR= 1.000182172404
0.D.= 7.50	TR= 0.000029776939	IR= 1.000182172412
0.D.= 8.00	TR= 0.000020271498	IR= 1.000182172404
0.D.= 8.50	TR= 0.000013800397	IR= 1.000182172369
0.D.= 9.00	TR= 0.000009395007	IR= 1.000182172252
0.D.= 9.50	TR= 0.000006395905	IR= 1.000182171880
0.D.=10.00	TR= 0.000004354166	IR= 1.000182170696
0.D.=10.50	TR= 0.000002964162	IR= 1.000182166934
0.D.=11.00	TR= 0.000002017805	IR= 1.000182154971
0.D.=11.50	TR= 0.000001373391	IR= 1.000182116939
0.D.=12.00	TR= 0.000000934355	IR= 1.000181996022
0.D.=12.50	TR= 0.000000634745	IR= 1.000181611594
0.D.=13.00	TR= 0.000000429213	IR= 1.000180389382
0.D.=13.50	TR= 0.000000285906	IR= 1.000176503617
0.D.=14.00	TR= 0.000000181018	IR= 1.000164149637
0.D.=14.50	TR= 0.000000093750	IR= 1.000124872731
0.D.=15.00	TR= 0.0	IR= 1.000000000000

TABLE 8-B LAKE PEND OREILLE 2

A=0.331000 B=0.009760 D(+)=1.000000 D(-)=1.000000
A(+)=0.331000 A(-)=0.331000 B(+)=0.009760 B(-)=0.009760
S=0.25800000 ALPHA=0.86900000 RHO=0.43803056

Do= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
Do= 0.85	R(0.0, 0.5)= 0.00629106	T(0.0, 0.5)= 0.74883142
Do= 1.70	R(0.0, 1.0)= 0.00981890	T(0.0, 1.0)= 0.56077070
Do= 2.55	R(0.0, 1.5)= 0.01179733	T(0.0, 1.5)= 0.41994866
Do= 3.40	R(0.0, 2.0)= 0.01290688	T(0.0, 2.0)= 0.31449409
Do= 4.24	R(0.0, 2.5)= 0.01352916	T(0.0, 2.5)= 0.23552218
Do= 5.09	R(0.0, 3.0)= 0.01387816	T(0.0, 3.0)= 0.17638142
Do= 5.94	R(0.0, 3.5)= 0.01407389	T(0.0, 3.5)= 0.13209149
Do= 6.79	R(0.0, 4.0)= 0.01418367	T(0.0, 4.0)= 0.09892301
Do= 7.64	R(0.0, 4.5)= 0.01424524	T(0.0, 4.5)= 0.07408327
Do= 8.49	R(0.0, 5.0)= 0.01427977	T(0.0, 5.0)= 0.05548085
Do= 9.34	R(0.0, 5.5)= 0.01429913	T(0.0, 5.5)= 0.04154954
Do= 10.19	R(0.0, 6.0)= 0.01431000	T(0.0, 6.0)= 0.03111640
Do= 11.04	R(0.0, 6.5)= 0.01431609	T(0.0, 6.5)= 0.02330304
Do= 11.88	R(0.0, 7.0)= 0.01431950	T(0.0, 7.0)= 0.01745162
Do= 12.73	R(0.0, 7.5)= 0.01432142	T(0.0, 7.5)= 0.01306950
Do= 13.58	R(0.0, 8.0)= 0.01432250	T(0.0, 8.0)= 0.00978773
Do= 14.43	R(0.0, 8.5)= 0.01432310	T(0.0, 8.5)= 0.00733002
Do= 15.28	R(0.0, 9.0)= 0.01432344	T(0.0, 9.0)= 0.00548945
Do= 16.13	R(0.0, 9.5)= 0.01432363	T(0.0, 9.5)= 0.00411104
Do= 16.98	R(0.0,10.0)= 0.01432373	T(0.0,10.0)= 0.00307875
Do= 17.83	R(0.0,10.5)= 0.01432379	T(0.0,10.5)= 0.00230567
Do= 18.68	R(0.0,11.0)= 0.01432383	T(0.0,11.0)= 0.00172672
Do= 19.52	R(0.0,11.5)= 0.01432384	T(0.0,11.5)= 0.00129314
Do= 20.37	R(0.0,12.0)= 0.01432385	T(0.0,12.0)= 0.00096843
Do= 21.22	R(0.0,12.5)= 0.01432386	T(0.0,12.5)= 0.00072526
Do= 22.07	R(0.0,13.0)= 0.01432386	T(0.0,13.0)= 0.00054314
Do= 22.92	R(0.0,13.5)= 0.01432387	T(0.0,13.5)= 0.00040676
Do= 23.77	R(0.0,14.0)= 0.01432387	T(0.0,14.0)= 0.00030462
Do= 24.62	R(0.0,14.5)= 0.01432387	T(0.0,14.5)= 0.00022813
Do= 25.47	R(0.0,15.0)= 0.01432387	T(0.0,15.0)= 0.00017085

Do= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
Do= 0.85	R(0.5,0.0)= 0.00629106	T(0.5,0.0)= 0.74883142
Do= 1.70	R(1.0,0.0)= 0.00981890	T(1.0,0.0)= 0.56077070
Do= 2.55	R(1.5,0.0)= 0.01179733	T(1.5,0.0)= 0.41994866
Do= 3.40	R(2.0,0.0)= 0.01290688	T(2.0,0.0)= 0.31449409
Do= 4.24	R(2.5,0.0)= 0.01352916	T(2.5,0.0)= 0.23552218
Do= 5.09	R(3.0,0.0)= 0.01387816	T(3.0,0.0)= 0.17638142
Do= 5.94	R(3.5,0.0)= 0.01407389	T(3.5,0.0)= 0.13209149
Do= 6.79	R(4.0,0.0)= 0.01418367	T(4.0,0.0)= 0.09892301
Do= 7.64	R(4.5,0.0)= 0.01424524	T(4.5,0.0)= 0.07408327
Do= 8.49	R(5.0,0.0)= 0.01427977	T(5.0,0.0)= 0.05548085
Do= 9.34	R(5.5,0.0)= 0.01429913	T(5.5,0.0)= 0.04154954
Do= 10.19	R(6.0,0.0)= 0.01431000	T(6.0,0.0)= 0.03111640
Do= 11.04	R(6.5,0.0)= 0.01431609	T(6.5,0.0)= 0.02330304
Do= 11.88	R(7.0,0.0)= 0.01431950	T(7.0,0.0)= 0.01745162
Do= 12.73	R(7.5,0.0)= 0.01432142	T(7.5,0.0)= 0.01306950
Do= 13.58	R(8.0,0.0)= 0.01432250	T(8.0,0.0)= 0.00978773
Do= 14.43	R(8.5,0.0)= 0.01432310	T(8.5,0.0)= 0.00733002
Do= 15.28	R(9.0,0.0)= 0.01432344	T(9.0,0.0)= 0.00548945
Do= 16.13	R(9.5,0.0)= 0.01432363	T(9.5,0.0)= 0.00411104
Do= 16.98	R(10.0,0.0)= 0.01432373	T(10.0,0.0)= 0.00307875
Do= 17.83	R(10.5,0.0)= 0.01432379	T(10.5,0.0)= 0.00230567
Do= 18.68	R(11.0,0.0)= 0.01432383	T(11.0,0.0)= 0.00172672
Do= 19.52	R(11.5,0.0)= 0.01432384	T(11.5,0.0)= 0.00129314
Do= 20.37	R(12.0,0.0)= 0.01432385	T(12.0,0.0)= 0.00096843
Do= 21.22	R(12.5,0.0)= 0.01432386	T(12.5,0.0)= 0.00072526
Do= 22.07	R(13.0,0.0)= 0.01432386	T(13.0,0.0)= 0.00054314
Do= 22.92	R(13.5,0.0)= 0.01432387	T(13.5,0.0)= 0.00040676
Do= 23.77	R(14.0,0.0)= 0.01432387	T(14.0,0.0)= 0.00030462
Do= 24.62	R(14.5,0.0)= 0.01432387	T(14.5,0.0)= 0.00022813
Do= 25.47	R(15.0,0.0)= 0.01432387	T(15.0,0.0)= 0.00017085

TABLE 8-B (CONTINUED)

R(0.0, 0.0,15.0)= 0.01432387	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.01072713	T(0.0, 0.5,15.0)= 0.74889891
R(0.0, 1.0,15.0)= 0.00803353	T(0.0, 1.0,15.0)= 0.56084958
R(0.0, 1.5,15.0)= 0.00601630	T(0.0, 1.5,15.0)= 0.42001964
R(0.0, 2.0,15.0)= 0.00450560	T(0.0, 2.0,15.0)= 0.31455225
R(0.0, 2.5,15.0)= 0.00337424	T(0.0, 2.5,15.0)= 0.23556783
R(0.0, 3.0,15.0)= 0.00252696	T(0.0, 3.0,15.0)= 0.17641649
R(0.0, 3.5,15.0)= 0.00189244	T(0.0, 3.5,15.0)= 0.13211812
R(0.0, 4.0,15.0)= 0.00141724	T(0.0, 4.0,15.0)= 0.09894312
R(0.0, 4.5,15.0)= 0.00106137	T(0.0, 4.5,15.0)= 0.07409839
R(0.0, 5.0,15.0)= 0.00079486	T(0.0, 5.0,15.0)= 0.05549220
R(0.0, 5.5,15.0)= 0.00059526	T(0.0, 5.5,15.0)= 0.04155805
R(0.0, 6.0,15.0)= 0.00044579	T(0.0, 6.0,15.0)= 0.03112278
R(0.0, 6.5,15.0)= 0.00033384	T(0.0, 6.5,15.0)= 0.02330782
R(0.0, 7.0,15.0)= 0.00025000	T(0.0, 7.0,15.0)= 0.01745520
R(0.0, 7.5,15.0)= 0.00018721	T(0.0, 7.5,15.0)= 0.01307218
R(0.0, 8.0,15.0)= 0.00014018	T(0.0, 8.0,15.0)= 0.00978974
R(0.0, 8.5,15.0)= 0.00010496	T(0.0, 8.5,15.0)= 0.00733152
R(0.0, 9.0,15.0)= 0.00007857	T(0.0, 9.0,15.0)= 0.00549057
R(0.0, 9.5,15.0)= 0.00005880	T(0.0, 9.5,15.0)= 0.00411188
R(0.0,10.0,15.0)= 0.00004397	T(0.0,10.0,15.0)= 0.00307938
R(0.0,10.5,15.0)= 0.00003285	T(0.0,10.5,15.0)= 0.00230615
R(0.0,11.0,15.0)= 0.00002450	T(0.0,11.0,15.0)= 0.00172707
R(0.0,11.5,15.0)= 0.00001820	T(0.0,11.5,15.0)= 0.00129340
R(0.0,12.0,15.0)= 0.00001344	T(0.0,12.0,15.0)= 0.00096862
R(0.0,12.5,15.0)= 0.00000981	T(0.0,12.5,15.0)= 0.00072540
R(0.0,13.0,15.0)= 0.00000701	T(0.0,13.0,15.0)= 0.00054324
R(0.0,13.5,15.0)= 0.00000480	T(0.0,13.5,15.0)= 0.00040683
R(0.0,14.0,15.0)= 0.00000299	T(0.0,14.0,15.0)= 0.00030466
R(0.0,14.5,15.0)= 0.00000144	T(0.0,14.5,15.0)= 0.00022815
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00017085

0.D0= 0.0	TR= 0.014323867539	IR= 1.000000000000
0.D0= 0.50	TR= 0.010726161882	IR= 1.000090120380
0.D0= 1.00	TR= 0.008032404650	IR= 1.000140664352
0.D0= 1.50	TR= 0.006015288147	IR= 1.000169011907
0.D0= 2.00	TR= 0.004504770539	IR= 1.000184910602
0.D0= 2.50	TR= 0.003373586887	IR= 1.000193827347
0.D0= 3.00	TR= 0.002526461866	IR= 1.000198828241
0.D0= 3.50	TR= 0.001892057839	IR= 1.000201632887
0.D0= 4.00	TR= 0.001416955967	IR= 1.000203205687
0.D0= 4.50	TR= 0.001061153364	IR= 1.000204087463
0.D0= 5.00	TR= 0.000794692895	IR= 1.000204581421
0.D0= 5.50	TR= 0.000595140059	IR= 1.000204857413
0.D0= 6.00	TR= 0.000445693772	IR= 1.000205010340
0.D0= 6.50	TR= 0.000333771673	IR= 1.000205092789
0.D0= 7.00	TR= 0.000249950711	IR= 1.000205133111
0.D0= 7.50	TR= 0.000187173764	IR= 1.000205145169
0.D0= 8.00	TR= 0.000140155470	IR= 1.000205133111
0.D0= 8.50	TR= 0.000104937235	IR= 1.000205092789
0.D0= 9.00	TR= 0.000078553940	IR= 1.000205010340
0.D0= 9.50	TR= 0.000058784307	IR= 1.000204857413
0.D0=10.00	TR= 0.000043963879	IR= 1.000204581421
0.D0=10.50	TR= 0.000032844885	IR= 1.000204087463
0.D0=11.00	TR= 0.000024491187	IR= 1.000203205687
0.D0=11.50	TR= 0.000018199467	IR= 1.000201632887
0.D0=12.00	TR= 0.000013440006	IR= 1.000198828241
0.D0=12.50	TR= 0.000009812092	IR= 1.000193827347
0.D0=13.00	TR= 0.000007010280	IR= 1.000184910602
0.D0=13.50	TR= 0.000004798670	IR= 1.000169011907
0.D0=14.00	TR= 0.000002991046	IR= 1.000140664352
0.D0=14.50	TR= 0.000001435183	IR= 1.000090120380
0.D0=15.00	TR= 0.0	IR= 1.000000000000

TABLE 9-A HYPOTHETICAL CASE 1

A=0.060000 B=0.270000 D(+)=2.670000 D(-)=1.330000
A(+)=0.160200 A(-)=0.079800 B(+)=0.720900 B(-)=0.359100
S=0.54000000 ALPHA=0.60000000 RHO=0.90000000

Do=	0.0	R(0.0, 0.0)=	0.0
Do=	0.83	R(0.0, 0.5)=	0.18813919
Do=	1.67	R(0.0, 1.0)=	0.26499684
Do=	2.50	R(0.0, 1.5)=	0.29988632
Do=	3.33	R(0.0, 2.0)=	0.31647823
Do=	4.17	R(0.0, 2.5)=	0.32454287
Do=	5.00	R(0.0, 3.0)=	0.32850436
Do=	5.83	R(0.0, 3.5)=	0.33046040
Do=	6.67	R(0.0, 4.0)=	0.33142869
Do=	7.50	R(0.0, 4.5)=	0.33190862
Do=	8.33	R(0.0, 5.0)=	0.33214665
Do=	9.17	R(0.0, 5.5)=	0.33226474
Do=	10.00	R(0.0, 6.0)=	0.33232333
Do=	10.83	R(0.0, 6.5)=	0.33235241
Do=	11.67	R(0.0, 7.0)=	0.33236684
Do=	12.50	R(0.0, 7.5)=	0.33237400
Do=	13.33	R(0.0, 8.0)=	0.33237755
Do=	14.17	R(0.0, 8.5)=	0.33237931
Do=	15.00	R(0.0, 9.0)=	0.33238019
Do=	15.83	R(0.0, 9.5)=	0.33238062
Do=	16.67	R(0.0,10.0)=	0.33238084
Do=	17.50	R(0.0,10.5)=	0.33238095
Do=	18.33	R(0.0,11.0)=	0.33238100
Do=	19.17	R(0.0,11.5)=	0.33238102
Do=	20.00	R(0.0,12.0)=	0.33238104
Do=	20.83	R(0.0,12.5)=	0.33238104
Do=	21.67	R(0.0,13.0)=	0.33238105
Do=	22.50	R(0.0,13.5)=	0.33238105
Do=	23.33	R(0.0,14.0)=	0.33238105
Do=	24.17	R(0.0,14.5)=	0.33238105
Do=	25.00	R(0.0,15.0)=	0.33238105

T(0.0, 0.0)=	1.00000000
T(0.0, 0.5)=	0.74065637
T(0.0, 1.0)=	0.59053456
T(0.0, 1.5)=	0.48602853
T(0.0, 2.0)=	0.40596132
T(0.0, 2.5)=	0.34149759
T(0.0, 3.0)=	0.28826749
T(0.0, 3.5)=	0.24375015
T(0.0, 4.0)=	0.20628164
T(0.0, 4.5)=	0.17464566
T(0.0, 5.0)=	0.14789210
T(0.0, 5.5)=	0.12524974
T(0.0, 6.0)=	0.10607934
T(0.0, 6.5)=	0.08984539
T(0.0, 7.0)=	0.07609677
T(0.0, 7.5)=	0.06445244
T(0.0, 8.0)=	0.05459010
T(0.0, 8.5)=	0.04623693
T(0.0, 9.0)=	0.03916197
T(0.0, 9.5)=	0.03316959
T(0.0,10.0)=	0.02809415
T(0.0,10.5)=	0.02379533
T(0.0,11.0)=	0.02015429
T(0.0,11.5)=	0.01707038
T(0.0,12.0)=	0.01445836
T(0.0,12.5)=	0.01224602
T(0.0,13.0)=	0.01037220
T(0.0,13.5)=	0.00878510
T(0.0,14.0)=	0.00744085
T(0.0,14.5)=	0.00630229
T(0.0,15.0)=	0.00533794

Do=	0.0	R(0.0,0.0)=	0.0
Do=	0.83	R(0.5,0.0)=	0.37769296
Do=	1.67	R(1.0,0.0)=	0.53198613
Do=	2.50	R(1.5,0.0)=	0.60202743
Do=	3.33	R(2.0,0.0)=	0.63533600
Do=	4.17	R(2.5,0.0)=	0.65152591
Do=	5.00	R(3.0,0.0)=	0.65947867
Do=	5.83	R(3.5,0.0)=	0.66340546
Do=	6.67	R(4.0,0.0)=	0.66534932
Do=	7.50	R(4.5,0.0)=	0.66631279
Do=	8.33	R(5.0,0.0)=	0.66679064
Do=	9.17	R(5.5,0.0)=	0.66702770
Do=	10.00	R(6.0,0.0)=	0.66714533
Do=	10.83	R(6.5,0.0)=	0.66720370
Do=	11.67	R(7.0,0.0)=	0.66723267
Do=	12.50	R(7.5,0.0)=	0.66724705
Do=	13.33	R(8.0,0.0)=	0.66725418
Do=	14.17	R(8.5,0.0)=	0.66725772
Do=	15.00	R(9.0,0.0)=	0.66725948
Do=	15.83	R(9.5,0.0)=	0.66726035
Do=	16.67	R(10.0,0.0)=	0.66726078
Do=	17.50	R(10.5,0.0)=	0.66726099
Do=	18.33	R(11.0,0.0)=	0.66726110
Do=	19.17	R(11.5,0.0)=	0.66726115
Do=	20.00	R(12.0,0.0)=	0.66726118
Do=	20.83	R(12.5,0.0)=	0.66726119
Do=	21.67	R(13.0,0.0)=	0.66726120
Do=	22.50	R(13.5,0.0)=	0.66726120
Do=	23.33	R(14.0,0.0)=	0.66726121
Do=	24.17	R(14.5,0.0)=	0.66726121
Do=	25.00	R(15.0,0.0)=	0.66726121

T(0.0,0.0)=	1.00000000
T(0.5,0.0)=	0.51236475
T(1.0,0.0)=	0.28259878
T(1.5,0.0)=	0.16089747
T(2.0,0.0)=	0.09296823
T(2.5,0.0)=	0.05410035
T(3.0,0.0)=	0.03159152
T(3.5,0.0)=	0.01847916
T(4.0,0.0)=	0.01081834
T(4.5,0.0)=	0.00633607
T(5.0,0.0)=	0.00371167
T(5.5,0.0)=	0.00217452
T(6.0,0.0)=	0.00127403
T(6.5,0.0)=	0.00074646
T(7.0,0.0)=	0.00043736
T(7.5,0.0)=	0.00025626
T(8.0,0.0)=	0.00015015
T(8.5,0.0)=	0.00008797
T(9.0,0.0)=	0.00005155
T(9.5,0.0)=	0.00003020
T(10.0,0.0)=	0.00001770
T(10.5,0.0)=	0.00001037
T(11.0,0.0)=	0.00000607
T(11.5,0.0)=	0.00000356
T(12.0,0.0)=	0.00000209
T(12.5,0.0)=	0.00000122
T(13.0,0.0)=	0.00000072
T(13.5,0.0)=	0.00000042
T(14.0,0.0)=	0.00000025
T(14.5,0.0)=	0.00000014
T(15.0,0.0)=	0.00000008

TABLE 9-A (CONTINUED)

R(0.0, 0.0,15.0)= 0.3323[illegible]105	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.281[illegible]102	T(0.0, 0.5,15.0)= 0.84698518
R(0.0, 1.0,15.0)= 0.238[illegible]481	T(0.0, 1.0,15.0)= 0.71738389
R(0.0, 1.5,15.0)= 0.201[illegible]922	T(0.0, 1.5,15.0)= 0.60761352
R(0.0, 2.0,15.0)= 0.171[illegible]546	T(0.0, 2.0,15.0)= 0.51463965
R(0.0, 2.5,15.0)= 0.144[illegible]229	T(0.0, 2.5,15.0)= 0.43589215
R(0.0, 3.0,15.0)= 0.122[illegible]715	T(0.0, 3.0,15.0)= 0.36919419
R(0.0, 3.5,15.0)= 0.103[illegible]621	T(0.0, 3.5,15.0)= 0.31270200
R(0.0, 4.0,15.0)= 0.088[illegible]642	T(0.0, 4.0,15.0)= 0.26485396
R(0.0, 4.5,15.0)= 0.074[illegible]214	T(0.0, 4.5,15.0)= 0.22432736
R(0.0, 5.0,15.0)= 0.062[illegible]200	T(0.0, 5.0,15.0)= 0.19000194
R(0.0, 5.5,15.0)= 0.053[illegible]961	T(0.0, 5.5,15.0)= 0.16092879
R(0.0, 6.0,15.0)= 0.045[illegible]423	T(0.0, 6.0,15.0)= 0.13630425
R(0.0, 6.5,15.0)= 0.038[illegible]239	T(0.0, 6.5,15.0)= 0.11544759
R(0.0, 7.0,15.0)= 0.032[illegible]062	T(0.0, 7.0,15.0)= 0.09778225
R(0.0, 7.5,15.0)= 0.027[illegible]717	T(0.0, 7.5,15.0)= 0.08281987
R(0.0, 8.0,15.0)= 0.023[illegible]446	T(0.0, 8.0,15.0)= 0.07014677
R(0.0, 8.5,15.0)= 0.019[illegible]590	T(0.0, 8.5,15.0)= 0.05941254
R(0.0, 9.0,15.0)= 0.016[illegible]260	T(0.0, 9.0,15.0)= 0.05032029
R(0.0, 9.5,15.0)= 0.014[illegible]059	T(0.0, 9.5,15.0)= 0.04261339
R(0.0,10.0,15.0)= 0.011[illegible]333	T(0.0,10.0,15.0)= 0.03609349
R(0.0,10.5,15.0)= 0.010[illegible]459	T(0.0,10.5,15.0)= 0.03056442
R(0.0,11.0,15.0)= 0.008[illegible]627	T(0.0,11.0,15.0)= 0.02587696
R(0.0,11.5,15.0)= 0.007[illegible]583	T(0.0,11.5,15.0)= 0.02189924
R(0.0,12.0,15.0)= 0.006[illegible]302	T(0.0,12.0,15.0)= 0.01851733
R(0.0,12.5,15.0)= 0.005[illegible]292	T(0.0,12.5,15.0)= 0.01563098
R(0.0,13.0,15.0)= 0.004[illegible]154	T(0.0,13.0,15.0)= 0.01314890
R(0.0,13.5,15.0)= 0.003[illegible]558	T(0.0,13.5,15.0)= 0.01098278
R(0.0,14.0,15.0)= 0.002[illegible]525	T(0.0,14.0,15.0)= 0.00903917
R(0.0,14.5,15.0)= 0.001[illegible]593	T(0.0,14.5,15.0)= 0.00720704
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00533794

0.D0= 0.0 TR= 0.332381050252	IR= 1.000000000000
0.D0= 0.50 TR= 0.240180140705	IR= 1.143560248110
0.D0= 1.00 TR= 0.196282496492	IR= 1.214804249321
0.D0= 1.50 TR= 0.161546673367	IR= 1.250160190148
0.D0= 2.00 TR= 0.134933847526	IR= 1.267706123269
0.D0= 2.50 TR= 0.113507324517	IR= 1.276413562263
0.D0= 3.00 TR= 0.095814646196	IR= 1.280734758637
0.D0= 3.50 TR= 0.081017925425	IR= 1.282879208558
0.D0= 4.00 TR= 0.068564098597	IR= 1.283943403243
0.D0= 4.50 TR= 0.058048888137	IR= 1.284471482294
0.D0= 5.00 TR= 0.049156501643	IR= 1.284733460897
0.D0= 5.50 TR= 0.041630586516	IR= 1.284863292862
0.D0= 6.00 TR= 0.035258672331	IR= 1.284927363330
0.D0= 6.50 TR= 0.029862749747	IR= 1.284958432545
0.D0= 7.00 TR= 0.025292859299	IR= 1.284972386690
0.D0= 7.50 TR= 0.021422316390	IR= 1.284976360740
0.D0= 8.00 TR= 0.018143938276	IR= 1.284972386690
0.D0= 8.50 TR= 0.015366956400	IR= 1.284958432545
0.D0= 9.00 TR= 0.013014435550	IR= 1.284927363330
0.D0= 9.50 TR= 0.011021086001	IR= 1.284863292862
0.D0=10.00 TR= 0.009331377763	IR= 1.284733460897
0.D0=10.50 TR= 0.007897873697	IR= 1.284471482294
0.D0=11.00 TR= 0.006679709113	IR= 1.283943403243
0.D0=11.50 TR= 0.005641085406	IR= 1.282879208558
0.D0=12.00 TR= 0.004749634[illegible]5	IR= 1.280734758637
0.D0=12.50 TR= 0.003974357[illegible]3	IR= 1.276413562263
0.D0=13.00 TR= 0.003282573[illegible]3	IR= 1.267706123269
0.D0=13.50 TR= 0.002634529[illegible]1	IR= 1.250160190148
0.D0=14.00 TR= 0.001971800[illegible]5	IR= 1.214804249321
0.D0=14.50 TR= 0.001185706996	IR= 1.143560248110
0.D0=15.00 TR= 0.0	IR= 1.000000000000

TABLE 9-B HYPOTHETICAL CASE 1

A=0.060000 B=0.270000 D(+)=1.000000 D(-)=1.000000
A(+)=0.060000 A(-)=0.060000 B(+)=0.270000 B(-)=0.270000
S=0.54000000 ALPHA=0.60000000 RHO=0.90000000

Do= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
Do= 0.83	R(0.0, 0.5)= 0.17532657	T(0.0, 0.5)= 0.77599185
Do= 1.67	R(0.0, 1.0)= 0.28425004	T(0.0, 1.0)= 0.62126053
Do= 2.50	R(0.0, 1.5)= 0.35546922	T(0.0, 1.5)= 0.50737915
Do= 3.33	R(0.0, 2.0)= 0.40360409	T(0.0, 2.0)= 0.41989104
Do= 4.17	R(0.0, 2.5)= 0.43686960	T(0.0, 2.5)= 0.35064451
Do= 5.00	R(0.0, 3.0)= 0.46021437	T(0.0, 3.0)= 0.29466728
Do= 5.83	R(0.0, 3.5)= 0.47677392	T(0.0, 3.5)= 0.24872879
Do= 6.67	R(0.0, 4.0)= 0.48861007	T(0.0, 4.0)= 0.21061725
Do= 7.50	R(0.0, 4.5)= 0.49711618	T(0.0, 4.5)= 0.17875013
Do= 8.33	R(0.0, 5.0)= 0.50325302	T(0.0, 5.0)= 0.15195247
Do= 9.17	R(0.0, 5.5)= 0.50769299	T(0.0, 5.5)= 0.12932466
Do= 10.00	R(0.0, 6.0)= 0.51091181	T(0.0, 6.0)= 0.11016050
Do= 10.83	R(0.0, 6.5)= 0.51324880	T(0.0, 6.5)= 0.09389437
Do= 11.67	R(0.0, 7.0)= 0.51494735	T(0.0, 7.0)= 0.08006611
Do= 12.50	R(0.0, 7.5)= 0.51618284	T(0.0, 7.5)= 0.06829675
Do= 13.33	R(0.0, 8.0)= 0.51708202	T(0.0, 8.0)= 0.05827130
Do= 14.17	R(0.0, 8.5)= 0.51773670	T(0.0, 8.5)= 0.04972614
Do= 15.00	R(0.0, 9.0)= 0.51821351	T(0.0, 9.0)= 0.04243943
Do= 15.83	R(0.0, 9.5)= 0.51856085	T(0.0, 9.5)= 0.03622383
Do= 16.67	R(0.0,10.0)= 0.51881392	T(0.0,10.0)= 0.03092062
Do= 17.50	R(0.0,10.5)= 0.51899832	T(0.0,10.5)= 0.02639510
Do= 18.33	R(0.0,11.0)= 0.51913269	T(0.0,11.0)= 0.02253273
Do= 19.17	R(0.0,11.5)= 0.51923063	T(0.0,11.5)= 0.01923603
Do= 20.00	R(0.0,12.0)= 0.51930200	T(0.0,12.0)= 0.01642198
Do= 20.83	R(0.0,12.5)= 0.51935402	T(0.0,12.5)= 0.01401979
Do= 21.67	R(0.0,13.0)= 0.51939193	T(0.0,13.0)= 0.01196911
Do= 22.50	R(0.0,13.5)= 0.51941956	T(0.0,13.5)= 0.01021845
Do= 23.33	R(0.0,14.0)= 0.51943970	T(0.0,14.0)= 0.00872391
Do= 24.17	R(0.0,14.5)= 0.51945439	T(0.0,14.5)= 0.00744798
Do= 25.00	R(0.0,15.0)= 0.51946509	T(0.0,15.0)= 0.00635868

Do= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
Do= 0.83	R(0.5,0.0)= 0.17532657	T(0.5,0.0)= 0.77599185
Do= 1.67	R(1.0,0.0)= 0.28425004	T(1.0,0.0)= 0.62126053
Do= 2.50	R(1.5,0.0)= 0.35546922	T(1.5,0.0)= 0.50737915
Do= 3.33	R(2.0,0.0)= 0.40360409	T(2.0,0.0)= 0.41989104
Do= 4.17	R(2.5,0.0)= 0.43686960	T(2.5,0.0)= 0.35064451
Do= 5.00	R(3.0,0.0)= 0.46021437	T(3.0,0.0)= 0.29466728
Do= 5.83	R(3.5,0.0)= 0.47677392	T(3.5,0.0)= 0.24872879
Do= 6.67	R(4.0,0.0)= 0.48861007	T(4.0,0.0)= 0.21061725
Do= 7.50	R(4.5,0.0)= 0.49711618	T(4.5,0.0)= 0.17875013
Do= 8.33	R(5.0,0.0)= 0.50325302	T(5.0,0.0)= 0.15195247
Do= 9.17	R(5.5,0.0)= 0.50769299	T(5.5,0.0)= 0.12932466
Do= 10.00	R(6.0,0.0)= 0.51091181	T(6.0,0.0)= 0.11016050
Do= 10.83	R(6.5,0.0)= 0.51324880	T(6.5,0.0)= 0.09389437
Do= 11.67	R(7.0,0.0)= 0.51494735	T(7.0,0.0)= 0.08006611
Do= 12.50	R(7.5,0.0)= 0.51618284	T(7.5,0.0)= 0.06829675
Do= 13.33	R(8.0,0.0)= 0.51708202	T(8.0,0.0)= 0.05827130
Do= 14.17	R(8.5,0.0)= 0.51773670	T(8.5,0.0)= 0.04972614
Do= 15.00	R(9.0,0.0)= 0.51821351	T(9.0,0.0)= 0.04243943
Do= 15.83	R(9.5,0.0)= 0.51856085	T(9.5,0.0)= 0.03622383
Do= 16.67	R(10.0,0.0)= 0.51881392	T(10.0,0.0)= 0.03092062
Do= 17.50	R(10.5,0.0)= 0.51899832	T(10.5,0.0)= 0.02639510
Do= 18.33	R(11.0,0.0)= 0.51913269	T(11.0,0.0)= 0.02253273
Do= 19.17	R(11.5,0.0)= 0.51923063	T(11.5,0.0)= 0.01923603
Do= 20.00	R(12.0,0.0)= 0.51930200	T(12.0,0.0)= 0.01642198
Do= 20.83	R(12.5,0.0)= 0.51935402	T(12.5,0.0)= 0.01401979
Do= 21.67	R(13.0,0.0)= 0.51939193	T(13.0,0.0)= 0.01196911
Do= 22.50	R(13.5,0.0)= 0.51941956	T(13.5,0.0)= 0.01021845
Do= 23.33	R(14.0,0.0)= 0.51943970	T(14.0,0.0)= 0.00872391
Do= 24.17	R(14.5,0.0)= 0.51945439	T(14.5,0.0)= 0.00744798
Do= 25.00	R(15.0,0.0)= 0.51946509	T(15.0,0.0)= 0.00635868

TABLE 9-B (CONTINUED)

R(0.0, 0.0,15.0)= 0.51946509	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.44348213	T(0.0, 0.5,15.0)= 0.85374605
R(0.0, 1.0,15.0)= 0.37860934	T(0.0, 1.0,15.0)= 0.72888025
R(0.0, 1.5,15.0)= 0.32322153	T(0.0, 1.5,15.0)= 0.62227446
R(0.0, 2.0,15.0)= 0.27593110	T(0.0, 2.0,15.0)= 0.53125796
R(0.0, 2.5,15.0)= 0.23555333	T(0.0, 2.5,15.0)= 0.45355060
R(0.0, 3.0,15.0)= 0.20107667	T(0.0, 3.0,15.0)= 0.38720565
R(0.0, 3.5,15.0)= 0.17163741	T(0.0, 3.5,15.0)= 0.33056103
R(0.0, 4.0,15.0)= 0.14649803	T(0.0, 4.0,15.0)= 0.28219766
R(0.0, 4.5,15.0)= 0.12502874	T(0.0, 4.5,15.0)= 0.24090394
R(0.0, 5.0,15.0)= 0.10669169	T(0.0, 5.0,15.0)= 0.20564538
R(0.0, 5.5,15.0)= 0.09102749	T(0.0, 5.5,15.0)= 0.17553868
R(0.0, 6.0,15.0)= 0.07764372	T(0.0, 6.0,15.0)= 0.14982959
R(0.0, 6.5,15.0)= 0.06620509	T(0.0, 6.5,15.0)= 0.12787405
R(0.0, 7.0,15.0)= 0.05642504	T(0.0, 7.0,15.0)= 0.10912203
R(0.0, 7.5,15.0)= 0.04805856	T(0.0, 7.5,15.0)= 0.09310375
R(0.0, 8.0,15.0)= 0.04089604	T(0.0, 8.0,15.0)= 0.07941791
R(0.0, 8.5,15.0)= 0.03475806	T(0.0, 8.5,15.0)= 0.06772167
R(0.0, 9.0,15.0)= 0.02949085	T(0.0, 9.0,15.0)= 0.05772199
R(0.0, 9.5,15.0)= 0.02496244	T(0.0, 9.5,15.0)= 0.04916837
R(0.0,10.0,15.0)= 0.02105939	T(0.0,10.0,15.0)= 0.04184653
R(0.0,10.5,15.0)= 0.01768393	T(0.0,10.5,15.0)= 0.03557303
R(0.0,11.0,15.0)= 0.01475148	T(0.0,11.0,15.0)= 0.03019070
R(0.0,11.5,15.0)= 0.01218859	T(0.0,11.5,15.0)= 0.02556473
R(0.0,12.0,15.0)= 0.00993106	T(0.0,12.0,15.0)= 0.02157920
R(0.0,12.5,15.0)= 0.00792231	T(0.0,12.5,15.0)= 0.01813427
R(0.0,13.0,15.0)= 0.00611204	T(0.0,13.0,15.0)= 0.01514365
R(0.0,13.5,15.0)= 0.00445489	T(0.0,13.5,15.0)= 0.01253241
R(0.0,14.0,15.0)= 0.00290934	T(0.0,14.0,15.0)= 0.01023513
R(0.0,14.5,15.0)= 0.00143667	T(0.0,14.5,15.0)= 0.00819427
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.00635868

0.D0= 0.0	TR= 0.519465085408	IR= 1.000000000000
0.D0= 0.50	TR= 0.403092368769	IR= 1.100199763487
0.D0= 1.00	TR= 0.322707385722	IR= 1.173228005970
0.D0= 1.50	TR= 0.263542656969	IR= 1.226448611785
0.D0= 2.00	TR= 0.218088016535	IR= 1.265228140117
0.D0= 2.50	TR= 0.182108635801	IR= 1.293476967987
0.D0= 3.00	TR= 0.153021306741	IR= 1.314043597481
0.D0= 3.50	TR= 0.129147603554	IR= 1.329001887638
0.D0= 4.00	TR= 0.109338298385	IR= 1.339860174340
0.D0= 4.50	TR= 0.092771018425	IR= 1.347713365046
0.D0= 5.00	TR= 0.078835056327	IR= 1.353353345006
0.D0= 5.50	TR= 0.067062706908	IR= 1.357348827892
0.D0= 6.00	TR= 0.057086658258	IR= 1.360102702683
0.D0= 6.50	TR= 0.048612561029	IR= 1.361892659414
0.D0= 7.00	TR= 0.041400743770	IR= 1.362899190372
0.D0= 7.50	TR= 0.035253608330	IR= 1.363223790228
0.D0= 8.00	TR= 0.030006653708	IR= 1.362899190372
0.D0= 8.50	TR= 0.025521881744	IR= 1.361892659414
0.D0= 9.00	TR= 0.021682808298	IR= 1.360102702683
0.D0= 9.50	TR= 0.018390583790	IR= 1.357348827892
0.D0=10.00	TR= 0.015560896020	IR= 1.353353345006
0.D0=10.50	TR= 0.013121429965	IR= 1.347713365046
0.D0=11.00	TR= 0.011009717758	IR= 1.339860174340
0.D0=11.50	TR= 0.009171239180	IR= 1.329001887638
0.D0=12.00	TR= 0.007557630687	IR= 1.314043597481
0.D0=12.50	TR= 0.006124819016	IR= 1.293476967987
0.D0=13.00	TR= 0.004830780333	IR= 1.265228140117
0.D0=13.50	TR= 0.003632345979	IR= 1.226448611785
0.D0=14.00	TR= 0.002479770766	IR= 1.173228005970
0.D0=14.50	TR= 0.001305828681	IR= 1.100199763487
0.D0=15.00	TR= 0.0	IR= 1.000000000000

TABLE 10-A HYPOTHETICAL CASE 2

A=0.005000 B=0.298000 D(+)=2.670000 D(-)=1.330000
A(+)=0.013350 A(-)=0.006650 B(+)=0.795660 B(-)=0.396340
S=0.59500000 ALPHA=0.40000000 RHO=0.99166667

D= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
D= 0.83	R(0.0, 0.5)= 0.21772404	T(0.0, 0.5)= 0.77604452
D= 1.67	R(0.0, 1.0)= 0.32103972	T(0.0, 1.0)= 0.66558476
D= 2.50	R(0.0, 1.5)= 0.37606797	T(0.0, 1.5)= 0.60083335
D= 3.33	R(0.0, 2.0)= 0.41218933	T(0.0, 2.0)= 0.55857711
D= 4.17	R(0.0, 2.5)= 0.43659704	T(0.0, 2.5)= 0.52873935
D= 5.00	R(0.0, 3.0)= 0.44743045	T(0.0, 3.0)= 0.50627365
D= 5.83	R(0.0, 3.5)= 0.45654058	T(0.0, 3.5)= 0.48840613
D= 6.67	R(0.0, 4.0)= 0.46261523	T(0.0, 4.0)= 0.47351305
D= 7.50	R(0.0, 4.5)= 0.46669974	T(0.0, 4.5)= 0.46060197
D= 8.33	R(0.0, 5.0)= 0.46946125	T(0.0, 5.0)= 0.44904777
D= 9.17	R(0.0, 5.5)= 0.47133536	T(0.0, 5.5)= 0.43844823
D= 10.00	R(0.0, 6.0)= 0.47261048	T(0.0, 6.0)= 0.42854056
D= 10.83	R(0.0, 6.5)= 0.47347956	T(0.0, 6.5)= 0.41915099
D= 11.67	R(0.0, 7.0)= 0.47407259	T(0.0, 7.0)= 0.41016352
D= 12.50	R(0.0, 7.5)= 0.47447759	T(0.0, 7.5)= 0.40149999
D= 13.33	R(0.0, 8.0)= 0.47475432	T(0.0, 8.0)= 0.39310723
D= 14.17	R(0.0, 8.5)= 0.47494349	T(0.0, 8.5)= 0.38494866
D= 15.00	R(0.0, 9.0)= 0.47507283	T(0.0, 9.0)= 0.37699874
D= 15.83	R(0.0, 9.5)= 0.47516127	T(0.0, 9.5)= 0.36923934
D= 16.67	R(0.0,10.0)= 0.47522176	T(0.0,10.0)= 0.36165729
D= 17.50	R(0.0,10.5)= 0.47526314	T(0.0,10.5)= 0.35424275
D= 18.33	R(0.0,11.0)= 0.47529144	T(0.0,11.0)= 0.34698815
D= 19.17	R(0.0,11.5)= 0.47531080	T(0.0,11.5)= 0.33988742
D= 20.00	R(0.0,12.0)= 0.47532405	T(0.0,12.0)= 0.33293555
D= 20.83	R(0.0,12.5)= 0.47533311	T(0.0,12.5)= 0.32612826
D= 21.67	R(0.0,13.0)= 0.47533930	T(0.0,13.0)= 0.31946175
D= 22.50	R(0.0,13.5)= 0.47534354	T(0.0,13.5)= 0.31293258
D= 23.33	R(0.0,14.0)= 0.47534644	T(0.0,14.0)= 0.30653757
D= 24.17	R(0.0,14.5)= 0.47534843	T(0.0,14.5)= 0.30027373
D= 25.00	R(0.0,15.0)= 0.47534979	T(0.0,15.0)= 0.29413820

D= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
D= 0.83	R(0.5,0.0)= 0.43708510	T(0.5,0.0)= 0.55327761
D= 1.67	R(1.0,0.0)= 0.64449326	T(1.0,0.0)= 0.33831114
D= 2.50	R(1.5,0.0)= 0.75897856	T(1.5,0.0)= 0.21773258
D= 3.33	R(2.0,0.0)= 0.82747782	T(2.0,0.0)= 0.14431417
D= 4.17	R(2.5,0.0)= 0.87045422	T(2.5,0.0)= 0.09739215
D= 5.00	R(3.0,0.0)= 0.89822503	T(3.0,0.0)= 0.06648506
D= 5.83	R(3.5,0.0)= 0.91651381	T(3.5,0.0)= 0.04572738
D= 6.67	R(4.0,0.0)= 0.92870897	T(4.0,0.0)= 0.03160703
D= 7.50	R(4.5,0.0)= 0.93690850	T(4.5,0.0)= 0.02191967
D= 8.33	R(5.0,0.0)= 0.94245227	T(5.0,0.0)= 0.01523552
D= 9.17	R(5.5,0.0)= 0.94621459	T(5.5,0.0)= 0.01060570
D= 10.00	R(6.0,0.0)= 0.94877441	T(6.0,0.0)= 0.00739043
D= 10.83	R(6.5,0.0)= 0.95051911	T(6.5,0.0)= 0.00515353
D= 11.67	R(7.0,0.0)= 0.95170964	T(7.0,0.0)= 0.00359540
D= 12.50	R(7.5,0.0)= 0.95252268	T(7.5,0.0)= 0.00250918
D= 13.33	R(8.0,0.0)= 0.95307823	T(8.0,0.0)= 0.00175152
D= 14.17	R(8.5,0.0)= 0.95345798	T(8.5,0.0)= 0.00122282
D= 15.00	R(9.0,0.0)= 0.95371763	T(9.0,0.0)= 0.00085380
D= 15.83	R(9.5,0.0)= 0.95389519	T(9.5,0.0)= 0.00059618
D= 16.67	R(10.0,0.0)= 0.95401662	T(10.0,0.0)= 0.00041632
D= 17.50	R(10.5,0.0)= 0.95409969	T(10.5,0.0)= 0.00029073
D= 18.33	R(11.0,0.0)= 0.95415650	T(11.0,0.0)= 0.00020303
D= 19.17	R(11.5,0.0)= 0.95419537	T(11.5,0.0)= 0.00014179
D= 20.00	R(12.0,0.0)= 0.95422196	T(12.0,0.0)= 0.00009902
D= 20.83	R(12.5,0.0)= 0.95424015	T(12.5,0.0)= 0.00006915
D= 21.67	R(13.0,0.0)= 0.95425259	T(13.0,0.0)= 0.00004829
D= 22.50	R(13.5,0.0)= 0.95426110	T(13.5,0.0)= 0.00003373
D= 23.33	R(14.0,0.0)= 0.95426692	T(14.0,0.0)= 0.00002355
D= 24.17	R(14.5,0.0)= 0.95427091	T(14.5,0.0)= 0.00001645
D= 25.00	R(15.0,0.0)= 0.95427363	T(15.0,0.0)= 0.00001149

TABLE 10-A (CONTINUED)

R(0.0, 0.0,15.0)= 0.47534979	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.46563559	T(0.0, 0.5,15.0)= 0.97956690
R(0.0, 1.0,15.0)= 0.45611880	T(0.0, 1.0,15.0)= 0.95955026
R(0.0, 1.5,15.0)= 0.44679495	T(0.0, 1.5,15.0)= 0.93994114
R(0.0, 2.0,15.0)= 0.43765944	T(0.0, 2.0,15.0)= 0.92073059
R(0.0, 2.5,15.0)= 0.42870748	T(0.0, 2.5,15.0)= 0.90190958
R(0.0, 3.0,15.0)= 0.41993401	T(0.0, 3.0,15.0)= 0.88346889
R(0.0, 3.5,15.0)= 0.41133345	T(0.0, 3.5,15.0)= 0.86539851
R(0.0, 4.0,15.0)= 0.40289955	T(0.0, 4.0,15.0)= 0.84768948
R(0.0, 4.5,15.0)= 0.39462500	T(0.0, 4.5,15.0)= 0.83032948
R(0.0, 5.0,15.0)= 0.38650092	T(0.0, 5.0,15.0)= 0.81330644
R(0.0, 5.5,15.0)= 0.37851623	T(0.0, 5.5,15.0)= 0.79660581
R(0.0, 6.0,15.0)= 0.37065659	T(0.0, 6.0,15.0)= 0.78021005
R(0.0, 6.5,15.0)= 0.36290300	T(0.0, 6.5,15.0)= 0.76409723
R(0.0, 7.0,15.0)= 0.35522975	T(0.0, 7.0,15.0)= 0.74823910
R(0.0, 7.5,15.0)= 0.34760146	T(0.0, 7.5,15.0)= 0.73259827
R(0.0, 8.0,15.0)= 0.33996895	T(0.0, 8.0,15.0)= 0.71712423
R(0.0, 8.5,15.0)= 0.33226314	T(0.0, 8.5,15.0)= 0.70174760
R(0.0, 9.0,15.0)= 0.32438656	T(0.0, 9.0,15.0)= 0.68637191
R(0.0, 9.5,15.0)= 0.31620092	T(0.0, 9.5,15.0)= 0.67086187
R(0.0,10.0,15.0)= 0.30750957	T(0.0,10.0,15.0)= 0.65502653
R(0.0,10.5,15.0)= 0.29803221	T(0.0,10.5,15.0)= 0.63859519
R(0.0,11.0,15.0)= 0.28736873	T(0.0,11.0,15.0)= 0.62118289
R(0.0,11.5,15.0)= 0.27494747	T(0.0,11.5,15.0)= 0.60224102
R(0.0,12.0,15.0)= 0.25995109	T(0.0,12.0,15.0)= 0.58098659
R(0.0,12.5,15.0)= 0.24121045	T(0.0,12.5,15.0)= 0.55630095
R(0.0,13.0,15.0)= 0.21705262	T(0.0,13.0,15.0)= 0.52658477
R(0.0,13.5,15.0)= 0.18508332	T(0.0,13.5,15.0)= 0.48955039
R(0.0,14.0,15.0)= 0.14187531	T(0.0,14.0,15.0)= 0.44192448
R(0.0,14.5,15.0)= 0.08252227	T(0.0,14.5,15.0)= 0.37902233
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.29413820

O.D.= 0.0	TR= 0.475349786330	IR= 1.000000000000
O.D.= 0.50	TR= 0.368891543068	IR= 1.262256060624
O.D.= 1.00	TR= 0.316383349775	IR= 1.441665003900
O.D.= 1.50	TR= 0.285602252808	IR= 1.564395745295
O.D.= 2.00	TR= 0.265513654840	IR= 1.648350014444
O.D.= 2.50	TR= 0.251327315300	IR= 1.705773534065
O.D.= 3.00	TR= 0.240644040037	IR= 1.745042203392
O.D.= 3.50	TR= 0.232144707281	IR= 1.771883822108
O.D.= 4.00	TR= 0.225056698885	IR= 1.790213557640
O.D.= 4.50	TR= 0.218907137588	IR= 1.802705018623
O.D.= 5.00	TR= 0.213397271327	IR= 1.811180232323
O.D.= 5.50	TR= 0.208333618970	IR= 1.816875408858
O.D.= 6.00	TR= 0.203587972626	IR= 1.820621257056
O.D.= 6.50	TR= 0.199073032511	IR= 1.822964153165
O.D.= 7.00	TR= 0.194726905629	IR= 1.824245836281
O.D.= 7.50	TR= 0.190502749697	IR= 1.824653255039
O.D.= 8.00	TR= 0.186361365566	IR= 1.824245836281
O.D.= 8.50	TR= 0.182265319386	IR= 1.822964153165
O.D.= 9.00	TR= 0.178173552334	IR= 1.820621257056
O.D.= 9.50	TR= 0.174035555032	IR= 1.816875408858
O.D.=10.00	TR= 0.169784081655	IR= 1.811180232323
O.D.=10.50	TR= 0.165325000454	IR= 1.802705018623
O.D.=11.00	TR= 0.160522036427	IR= 1.790213557640
O.D.=11.50	TR= 0.155172400403	IR= 1.771883822108
O.D.=12.00	TR= 0.148965502825	IR= 1.745042203392
O.D.=12.50	TR= 0.141408249120	IR= 1.705773534065
O.D.=13.00	TR= 0.131678722211	IR= 1.648350014444
O.D.=13.50	TR= 0.118309783787	IR= 1.564395745295
O.D.=14.00	TR= 0.098410733394	IR= 1.441665003900
O.D.=14.50	TR= 0.065376808709	IR= 1.262256060624
O.D.=15.00	TR= 0.0	IR= 1.000000000000

TABLE 10-B HYPOTHETICAL CASE 2

A=0.005000 B=0.298000 D(+)=1.000000 D(-)=1.000000
A(+)=0.005000 A(-)=0.005000 B(+)=0.298000 B(-)=0.298000
S=0.59500000 ALPHA=0.60000000 RHO=0.99166667

Do= 0.0	R(0.0, 0.0)= 0.0	T(0.0, 0.0)= 1.00000000
Do= 0.83	R(0.0, 0.5)= 0.19816009	T(0.0, 0.5)= 0.79768263
Do= 1.67	R(0.0, 1.0)= 0.32940242	T(0.0, 1.0)= 0.66230457
Do= 2.50	R(0.0, 1.5)= 0.42239484	T(0.0, 1.5)= 0.56520208
Do= 3.33	R(0.0, 2.0)= 0.49148034	T(0.0, 2.0)= 0.49203620
Do= 4.17	R(0.0, 2.5)= 0.54463128	T(0.0, 2.5)= 0.43483842
Do= 5.00	R(0.0, 3.0)= 0.58663331	T(0.0, 3.0)= 0.38882687
Do= 5.83	R(0.0, 3.5)= 0.62053318	T(0.0, 3.5)= 0.35095841
Do= 6.67	R(0.0, 4.0)= 0.64836301	T(0.0, 4.0)= 0.31920437
Do= 7.50	R(0.0, 4.5)= 0.67153035	T(0.0, 4.5)= 0.29216046
Do= 8.33	R(0.0, 5.0)= 0.69104116	T(0.0, 5.0)= 0.26882385
Do= 9.17	R(0.0, 5.5)= 0.70763356	T(0.0, 5.5)= 0.24845934
Do= 10.00	R(0.0, 6.0)= 0.72186150	T(0.0, 6.0)= 0.23051570
Do= 10.83	R(0.0, 6.5)= 0.73414886	T(0.0, 6.5)= 0.21457157
Do= 11.67	R(0.0, 7.0)= 0.74482558	T(0.0, 7.0)= 0.20029937
Do= 12.50	R(0.0, 7.5)= 0.75415231	T(0.0, 7.5)= 0.18744056
Do= 13.33	R(0.0, 8.0)= 0.76233771	T(0.0, 8.0)= 0.17578841
Do= 14.17	R(0.0, 8.5)= 0.76955081	T(0.0, 8.5)= 0.16517559
Do= 15.00	R(0.0, 9.0)= 0.77593000	T(0.0, 9.0)= 0.15546526
Do= 15.83	R(0.0, 9.5)= 0.78158963	T(0.0, 9.5)= 0.14654436
Do= 16.67	R(0.0,10.0)= 0.78662505	T(0.0,10.0)= 0.13831867
Do= 17.50	R(0.0,10.5)= 0.79111636	T(0.0,10.5)= 0.13070902
Do= 18.33	R(0.0,11.0)= 0.79513131	T(0.0,11.0)= 0.12364838
Do= 19.17	R(0.0,11.5)= 0.79872761	T(0.0,11.5)= 0.11707962
Do= 20.00	R(0.0,12.0)= 0.80195468	T(0.0,12.0)= 0.11095367
Do= 20.83	R(0.0,12.5)= 0.80485509	T(0.0,12.5)= 0.10522820
Do= 21.67	R(0.0,13.0)= 0.80746568	T(0.0,13.0)= 0.09986642
Do= 22.50	R(0.0,13.5)= 0.80981845	T(0.0,13.5)= 0.09483621
Do= 23.33	R(0.0,14.0)= 0.81194135	T(0.0,14.0)= 0.09010938
Do= 24.17	R(0.0,14.5)= 0.81385887	T(0.0,14.5)= 0.08566107
Do= 25.00	R(0.0,15.0)= 0.81559253	T(0.0,15.0)= 0.08146925

Do= 0.0	R(0.0,0.0)= 0.0	T(0.0,0.0)= 1.00000000
Do= 0.83	R(0.5,0.0)= 0.19816009	T(0.5,0.0)= 0.79768263
Do= 1.67	R(1.0,0.0)= 0.32940242	T(1.0,0.0)= 0.66230457
Do= 2.50	R(1.5,0.0)= 0.42239484	T(1.5,0.0)= 0.56520208
Do= 3.33	R(2.0,0.0)= 0.49148034	T(2.0,0.0)= 0.49203620
Do= 4.17	R(2.5,0.0)= 0.54463128	T(2.5,0.0)= 0.43483842
Do= 5.00	R(3.0,0.0)= 0.58663331	T(3.0,0.0)= 0.38882687
Do= 5.83	R(3.5,0.0)= 0.62053318	T(3.5,0.0)= 0.35095841
Do= 6.67	R(4.0,0.0)= 0.64836301	T(4.0,0.0)= 0.31920437
Do= 7.50	R(4.5,0.0)= 0.67153035	T(4.5,0.0)= 0.29216046
Do= 8.33	R(5.0,0.0)= 0.69104116	T(5.0,0.0)= 0.26882385
Do= 9.17	R(5.5,0.0)= 0.70763356	T(5.5,0.0)= 0.24845934
Do= 10.00	R(6.0,0.0)= 0.72186150	T(6.0,0.0)= 0.23051570
Do= 10.83	R(6.5,0.0)= 0.73414886	T(6.5,0.0)= 0.21457157
Do= 11.67	R(7.0,0.0)= 0.74482558	T(7.0,0.0)= 0.20029937
Do= 12.50	R(7.5,0.0)= 0.75415231	T(7.5,0.0)= 0.18744056
Do= 13.33	R(8.0,0.0)= 0.76233771	T(8.0,0.0)= 0.17578841
Do= 14.17	R(8.5,0.0)= 0.76955081	T(8.5,0.0)= 0.16517559
Do= 15.00	R(9.0,0.0)= 0.77593000	T(9.0,0.0)= 0.15546526
Do= 15.83	R(9.5,0.0)= 0.78158963	T(9.5,0.0)= 0.14654436
Do= 16.67	R(10.0,0.0)= 0.78662505	T(10.0,0.0)= 0.13831867
Do= 17.50	R(10.5,0.0)= 0.79111636	T(10.5,0.0)= 0.13070902
Do= 18.33	R(11.0,0.0)= 0.79513131	T(11.0,0.0)= 0.12364838
Do= 19.17	R(11.5,0.0)= 0.79872761	T(11.5,0.0)= 0.11707962
Do= 20.00	R(12.0,0.0)= 0.80195468	T(12.0,0.0)= 0.11095367
Do= 20.83	R(12.5,0.0)= 0.80485509	T(12.5,0.0)= 0.10522820
Do= 21.67	R(13.0,0.0)= 0.80746568	T(13.0,0.0)= 0.09986642
Do= 22.50	R(13.5,0.0)= 0.80981845	T(13.5,0.0)= 0.09483621
Do= 23.33	R(14.0,0.0)= 0.81194135	T(14.0,0.0)= 0.09010938
Do= 24.17	R(14.5,0.0)= 0.81385887	T(14.5,0.0)= 0.08566107
Do= 25.00	R(15.0,0.0)= 0.81559253	T(15.0,0.0)= 0.08146925

TABLE 10-8 (CONTINUED)

R(0.0, 0.0,15.0)= 0.81559253	T(0.0, 0.0,15.0)= 1.00000000
R(0.0, 0.5,15.0)= 0.77402172	T(0.0, 0.5,15.0)= 0.95106502
R(0.0, 1.0,15.0)= 0.73416841	T(0.0, 1.0,15.0)= 0.90411507
R(0.0, 1.5,15.0)= 0.69567739	T(0.0, 1.5,15.0)= 0.85905216
R(0.0, 2.0,15.0)= 0.65871614	T(0.0, 2.0,15.0)= 0.81578224
R(0.0, 2.5,15.0)= 0.62313088	T(0.0, 2.5,15.0)= 0.77421499
R(0.0, 3.0,15.0)= 0.58884418	T(0.0, 3.0,15.0)= 0.73426366
R(0.0, 3.5,15.0)= 0.55579050	T(0.0, 3.5,15.0)= 0.69584486
R(0.0, 4.0,15.0)= 0.52389405	T(0.0, 4.0,15.0)= 0.65887840
R(0.0, 4.5,15.0)= 0.49307265	T(0.0, 4.5,15.0)= 0.62328714
R(0.0, 5.0,15.0)= 0.46331863	T(0.0, 5.0,15.0)= 0.58899678
R(0.0, 5.5,15.0)= 0.43451243	T(0.0, 5.5,15.0)= 0.55593576
R(0.0, 6.0,15.0)= 0.40661459	T(0.0, 6.0,15.0)= 0.52403507
R(0.0, 6.5,15.0)= 0.37956411	T(0.0, 6.5,15.0)= 0.49322813
R(0.0, 7.0,15.0)= 0.35330590	T(0.0, 7.0,15.0)= 0.46345064
R(0.0, 7.5,15.0)= 0.32778510	T(0.0, 7.5,15.0)= 0.43464045
R(0.0, 8.0,15.0)= 0.30294844	T(0.0, 8.0,15.0)= 0.40673742
R(0.0, 8.5,15.0)= 0.27874408	T(0.0, 8.5,15.0)= 0.37968333
R(0.0, 9.0,15.0)= 0.25512152	T(0.0, 9.0,15.0)= 0.35342170
R(0.0, 9.5,15.0)= 0.23203143	T(0.0, 9.5,15.0)= 0.32789772
R(0.0,10.0,15.0)= 0.20942563	T(0.0,10.0,15.0)= 0.30305812
R(0.0,10.5,15.0)= 0.18725694	T(0.0,10.5,15.0)= 0.27885105
R(0.0,11.0,15.0)= 0.16547909	T(0.0,11.0,15.0)= 0.25522599
R(0.0,11.5,15.0)= 0.14404662	T(0.0,11.5,15.0)= 0.23213363
R(0.0,12.0,15.0)= 0.12291479	T(0.0,12.0,15.0)= 0.20952577
R(0.0,12.5,15.0)= 0.10203952	T(0.0,12.5,15.0)= 0.18735522
R(0.0,13.0,15.0)= 0.08137721	T(0.0,13.0,15.0)= 0.16557572
R(0.0,13.5,15.0)= 0.06088476	T(0.0,13.5,15.0)= 0.14414181
R(0.0,14.0,15.0)= 0.04051928	T(0.0,14.0,15.0)= 0.12300874
R(0.0,14.5,15.0)= 0.02023857	T(0.0,14.5,15.0)= 0.10213241
R(0.0,15.0,15.0)= 0.0	T(0.0,15.0,15.0)= 0.08146925

0.D0= 0.0	TR= 0.815592528922	IR= 1.000000000000
0.D0= 0.50	TR= 0.649201083306	IR= 1.192284981530
0.D0= 1.00	TR= 0.537759466288	IR= 1.365104684940
0.D0= 1.50	TR= 0.457711073566	IR= 1.519902678426
0.D0= 2.00	TR= 0.397302341784	IR= 1.657971994302
0.D0= 2.50	TR= 0.349981915556	IR= 1.780465929729
0.D0= 3.00	TR= 0.311821532370	IR= 1.888407680248
0.D0= 3.50	TR= 0.280320174418	IR= 1.982698886558
0.D0= 4.00	TR= 0.253809285318	IR= 2.064127165951
0.D0= 4.50	TR= 0.231132917160	IR= 2.133372691303
0.D0= 5.00	TR= 0.211463575422	IR= 2.191013872577
0.D0= 5.50	TR= 0.194193240862	IR= 2.237532188300
0.D0= 6.00	TR= 0.178864044030	IR= 2.273316207367
0.D0= 6.50	TR= 0.165123727708	IR= 2.298664834769
0.D0= 7.00	TR= 0.152695761426	IR= 2.313789808356
0.D0= 7.50	TR= 0.141358731505	IR= 2.318817467488
0.D0= 8.00	TR= 0.130931702028	IR= 2.313789808356
0.D0= 8.50	TR= 0.121263474302	IR= 2.298664834769
0.D0= 9.00	TR= 0.112224386355	IR= 2.273316207367
0.D0= 9.50	TR= 0.103699706044	IR= 2.237532188300
0.D0=10.00	TR= 0.095583891609	IR= 2.191013872577
0.D0=10.50	TR= 0.087775072103	IR= 2.133372691303
0.D0=11.00	TR= 0.080169037263	IR= 2.064127165951
0.D0=11.50	TR= 0.072651786510	IR= 1.982698886558
0.D0=12.00	TR= 0.065079120193	IR= 1.888407680248
0.D0=12.50	TR= 0.057310569969	IR= 1.780465929729
0.D0=13.00	TR= 0.049082380491	IR= 1.657971994302
0.D0=13.50	TR= 0.040058325304	IR= 1.519902678426
0.D0=14.00	TR= 0.029682248391	IR= 1.365104684940
0.D0=14.50	TR= 0.016974605764	IR= 1.192284981530
0.D0=15.00	TR= 0.0	IR= 1.000000000000

PROGRAM FOR COMPUTATION OF REFLECTANCE
AND TRANSMITTANCE FACTORS

```
      DIMENSION Y(2),F(2),RI(31),TI(31),R(31,31),T(31,31)
      DIMENSION REFP(31),REFM(31),TRANM(31),TRANP(31)
      IMPLICIT REAL*8 (A-H,O-Z)
      DO 13 M=1,10
      DP=2.67D0
      DM=1.33D0
      READ(5,200)A,B,ALPHA,SCAT
  200 FORMAT(4F11.8)
      DO 34 N=1,2
      WRITE(7,300)A,B,DP,DM
  300 FORMAT(3X,'A=',F8.6,2X,'B=',F8.6,2X,'D(+)=',F8.6,2X,
     1'D(-)=',F8.6)
      AP=DP*A
      AM=DM*A
      BP=DP*B
      BM=DM*B
      WRITE(7,400)AP,AM,BP,BM
  400 FORMAT(1X,'A(+)=',F8.6,2X,'A(-)=',F8.6,2X,'B(+)=',
     2F8.6,2X,'B(-)=',F8.6)
      AP=AP/ALPHA
      AM=AM/ALPHA
      BP=BP/ALPHA
      BM=BM/ALPHA
      RHO=SCAT/ALPHA
      WRITE(7,500)SCAT,ALPHA,RHO
  500 FORMAT(7X,'S=',F10.8,2X,'ALPHA=',F10.8,2X,'RHO=',
     7F10.8)
      Y(1)=0.D0
      Y(2)=1.D0
      X=0.D0
      H=0.001D0
      NT=0
      Z=15.D0
      TDEP=Z/ALPHA
      OD=0.0D0
      DEPTH=0.0D0
      RHOM=BM
      RHOP=BP
      TAUP=-(AP+BP)
      TAUM=-(AM+BM)
      J=0
      K=0
      L=1
      WRITE(7,700) DEPTH,OD,Y(1),OD,Y(2)
  700 FORMAT(1X,'D=',F6.2,2X,'R(0.0,',F4.1,')=',F11.8,2X,
     4'T(0.0,'F4.1,')=',F11.8)
      RI(L)=Y(1)
      TI(L)=Y(2)
   30 F(1)=RHOM+(TAUP+TAUM)*Y(1)+RHOP*Y(1)**2
      F(2)=(TAUM+RHOP*Y(1))*Y(2)
      S=RKLDEQ(2,Y,F,X,H,NT)
      IF(S-1.0)40,30,14
   40 STOP
   14 K=K+1
      IF(500-K)15,15,30
   15 OD=OD+0.5D0
      DEPTH=DEPTH+TDEP/30.D0
      WRITE(7,700) DEPTH,OD,Y(1),OD,Y(2)
      L=L+1
      RI(L)=Y(1)
      TI(L)=Y(2)
      J=J+1
      K=0
      IF(30-J)16,16,30
   16 CONTINUE
      DO 22 L=1,31
      DO 23 K=L,31
      R(L,K)=RI(K-L+1)
      T(L,K)=TI(K-L+1)
```

```
 23 CONTINUE
 22 CONTINUE
    Y(1)=0.0D0
    Y(2)=1.0D0
    X=0.0D0
    H=0.001D0
    NT=0
    OD=0.0D0
    DEPTH=0.0D0
    J=0
    K=0
    L=1
    WRITE(7,800) DEPTH,OD,Y(1),OD,Y(2)
800 FORMAT(1X,'D=',F6.2,2X,'R(',F4.1,',0.0)=',F11.8,2X,
   5'T(',F4.1,',0.0)=',F11.8)
    RI(L)=Y(1)
    TI(L)=Y(2)
 50 F(1)=RHOP+(TAUM+TAUP)*Y(1)+RHOM*Y(1)**2
    F(2)=(TAUP+RHOM*Y(1))*Y(2)
    S=RKLDEQ(2,Y,F,X,H,NT)
    IF(S-1.0)60,50,35
 60 STOP
 35 K=K+1
    IF(500-K)36,36,50
 36 OD=OD+0.5D0
    DEPTH=DEPTH+TDEP/30.0D0
    WRITE(7,800) DEPTH,OD,Y(1),OD,Y(2)
    L=L+1
    RI(L)=Y(1)
    TI(L)=Y(2)
    J=J+1
    K=0
    IF(30-J)37,37,50
 37 CONTINUE
    DO 24 K=1,31
    DO 25 L=K,31
    R(L,K)=RI(L-K+1)
    T(L,K)=TI(L-K+1)
 25 CONTINUE
 24 CONTINUE
    DO 26 I=1,31
    REFM(I)=T(1,I)*R(I,31)/(1.-R(I,1)*R(I,31))
    TRANM(I)=T(1,I)/(1.-R(I,1)*R(I,31))
    REFP(I)=T(31,I)*R(I,1)/(1.-R(I,31)*R(I,1))
    TRANP(I)=T(31,I)/(1.-R(I,31)*R(I,1))
 26 CONTINUE
    OD=0.0D0
    HMX=1.0D0
    HPZ=0.0D0
    DO 32 I=1,31
    Y(2)=HPZ*TRANP(I)+HMX*REFM(I)
    Y(1)=HMX*TRANM(I)+HPZ*REFP(I)
    WRITE(7,600) OD,Y(2),OD,Y(1)
600 FORMAT(1X,'R(0.0,',F4.1,',15.0)=',F11.8,2X,'T(0.0,',
   6F4.1,',15.0)=',F11.8)
    OD=OD+0.5D0
 32 CONTINUE
    OD=0.0D0
    DO 38 I=1,31
    TR=T(1,I)*R(I,31)
    IR=1./(1.-R(I,31)*R(I,1))
    WRITE(7,900) OD,TR,IR
900 FORMAT(3X,'D=',F5.2,2X,'TR=',F15.12,2X,'IR=',
   8F15.12)
    OD=OD+0.5D0
 38 CONTINUE
    DP=1.0D0
    DM=1.0D0
 34 CONTINUE
 13 CONTINUE
    STOP
    END
```

ROUTINE FOR RKLDEQ

PURPOSE:
THIS ROUTINE SOLVES A SYSTEM OF N FIRST-ORDER ORDINARY DIFFERENTIAL EQUATIONS BY THE RUNGE-KUTTA-GILL FOURTH-ORDER METHOD. ALL CALCULATIONS ARE DOUBLE-PRECISION.

USAGE: (WHEN USED BY A FORTRAN CALLING PROGRAM)
S = RKLDEQ (N,Y,F,X,H,NT)
FOUR ENTRIES ARE REQUIRED TO ADVANCE THE SOLUTION FROM X TO X+H WHERE H IS THE INCREMENT.

DESCRIPTION OF PARAMETERS:
N - NUMBER OF FIRST-ORDER EQUATIONS IN SYSTEM TO BE SOLVED.
Y - NAME OF LINEAR ARRAY OF LENGTH AT LEAST N, IN WHICH SOLUTION VALUES WILL BE STORED BY RKLDEQ. THE CALLING PROGRAM SHOULD SUPPLY INITIAL VALUES BEFORE FIRST ENTRY.
F - NAME OF LINEAR ARRAY OF LENGTH AT LEAST N, IN WHICH THE DERIVITIVES, COMPUTED BY USER'S CALLING PROGRAM, ARE STORED.
X - THE INDEPDENT VARIABLE, WHICH IS ADVANCED WITHIN RKLDEQ.
H - THE INCREMENT FOR X, WHICH MAY BE CHANGED AT THE END OF ANY INTERVAL. (WHEN S=2.0)
NT - AN INTEGER WHICH COUNTS THE NUMBER OF TIMES ENTRY TO RKLDEQ HAS BEEN MADE DURING THE CURRENT INTERVAL. IT MUST BE INITIALLY SET TO ZERO BY USER BEFORE FIRST CALL OF RKLDEQ. SUBSEQUENTLY IT SHOULD NOT BE CHANGED BY THE USER.
S - A SWITCH TO BE TESTED BY USER UPON RETURN FROM RKLDEQ.
IF S=1.0, THE CALLING PROGRAM SHOULD NOW COMPUTE VALUES OF F, USING CURRENT VALUES OF X AND Y, AND RETURN TO RKLDEQ.
IF S=2.0, AND END OF PRESENT INTERVAL HAS BEEN REACHED, USER SHOULD STORE AND/OR OUTPUT CURRENT X AND/OR Y AND TEST FOR END OF COMPUTATION.

REMARKS:
Y,F,X, AND H ARE DOUBLE PRECISION (REAL*8), RKLDEQ IS REAL*4. MAXIMUM N IS 25.

```
      FUNCTION RKLDEQ (N,Y,F,X,H,NT)
      REAL*8 Y,F,X,H,Q,H1,H2,H3,H6
      DIMENSION Y(1), F(1), Q(25)
      NT = NT +1
      GO TO (1,2,3,4),NT
    1 H1 = H
      H2 = H1 * .5D0
      H3 = H1 * 2.D0
      H6 = H1/6.D0
      DO 11 J =1,N
   11 Q(J) = 0.D0
      A = .5D0
      X = X + H2
      GO TO 5
    2 A = .2928932188134525
      GO TO 5
    3 A = 1.7071067811865475
      X = X + H2
      GO TO 5
    4 DO 41 I = 1,N
   41 Y(I) = Y(I) + H6 * F(I) -Q(I)/3.D0
      NT = 0
      RKLDEQ =2.
      GO TO 6
    5 DO 51 L = 1,N
      Y(L) = Y(L) + A *(H * F(L) -Q(L))
   51 Q(L) = H3 * A *F(L) +(1.D0-3.D0*A) *Q(L)
      RKLDEQ =1.
    6 RETURN
      END
```

LIST OF REFERENCES

1. Preisendorfer, R. W., Radiative Transfer on Discrete Spaces, Pergamon Press, N. Y., 1965.

2. Tyler, J. E., "Scattering Properties of Distilled and Natural Waters," Terminology and Oceanography, 6, 451, 1961.

3. Preisendorfer, R. W., Hydrologic Optics. (In manuscript.)

INITIAL DISTRIBUTION LIST

		No. Copies
1.	Defense Documentation Center Cameron Station Alexandria, Virginia 22314	2
2.	Library, Code 0212 Naval Postgraduate School Monterey, California 93940	2
3.	Professor R. W. Preisendorfer, Code 53Ps Department of Mathematics Naval Postgraduate School Monterey, California 93940	1
4.	LT(jg) Marvin Howard Crisp, USN 4923 N. Madison Spokane, Washington 99208	1

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author)
Naval Postgraduate School
Monterey, California 93940

2a. REPORT SECURITY CLASSIFICATION
Unclassified

2b. GROUP

3. REPORT TITLE

A STUDY OF THE TWO-FLOW MODEL OF LIGHT IN THE SEA

4. DESCRIPTIVE NOTES (Type of report and, inclusive dates)
Master's Thesis (June 1970)

5. AUTHOR(S) (First name, middle initial, last name)
Marvin Howard Crisp
Lieutenant (junior grade), United States Navy
B.S., United States Naval Academy, 1969

6. REPORT DATE
June 1970

7a. TOTAL NO. OF PAGES
115

7b. NO. OF REFS
3

8a. CONTRACT OR GRANT NO.

b. PROJECT NO.

c.

d.

9a. ORIGINATOR'S REPORT NUMBER(S)

9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)

10. DISTRIBUTION STATEMENT
This document has been approved for public release and sale; its distribution is unlimited.

11. SUPPLEMENTARY NOTES

12. SPONSORING MILITARY ACTIVITY
Naval Postgraduate School
Monterey, California 93940

13. ABSTRACT

The principles of invariance form the foundation of the study of irradiance fields in the sea. By review of the existing theory, it is shown how these principles may be applied to imbedded layers to derive complete reflectance and transmittance factors for the containing layer. These complete factors in turn yield the desired irradiance fields. They are also used to develop local invariance principles and the associated local transmittance and reflectance factors. Differential equations for reflectance and transmittance are developed, based on these local factors, and in turn are used in numerical computations of the reflectance and transmittance factors for arbitrarily deep layers of water. Boundary conditions on the upper and lower surfaces of the layer are chosen so that the complete reflectance and the complete transmittance factors generate the irradiances of the appropriate light field. Numerical computations are based on real data for eight natural media. To study the dependence of the light field on extreme cases of the optical properties, two hypothetical cases are also considered.

KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
irradiance fields (study of)						
reflectance and transmittance factors						
principles of invariance						